#3.20

PRE-STORM PLANNING FOR POST-STORM REDEVELOPMENT:

POLICIES AND OPTIONS FOR FLORIDA'S BEACHFRONT AREAS

Phase I

FINAL REPORT

February, 1994

This study was funded in part by the Florida Department of Community Affairs, Coastal Management Program, with the support of the National Oceanic and Atmospheric Administration under the Coastal Zone Management Act of 1972, as amended.

PRE-STORM PLANNING FOR POST-STORM REDEVELOPMENT:

POLICIES AND OPTIONS FOR FLORIDA'S BEACHFRONT AREAS

Phase I

February, 1994

FAU/FIU Joint Center for Environmental and Urban Problems, Ft. Lauderdale, FL
Florida Atlantic University, Department of Economics, Boca Raton, FL
Flack & Associates, Tallahassee, FL
Successful Communities Institute of 1000 Friends of Florida, Tallahassee, FL

ACKNOWLEDGEMENTS

The contents of this document were produced for the Division of Beaches and Shores within the Florida Department of Environmental Protection under DEP contract C-8151. The following persons and organizations were responsible for producing the contents of this document for the first phase of the project:

FAU/FIU Joint Center for Environmental and Urban Problems, Ft. Lauderdale, FL
- Patricia M. Metzger
- Michele E. Correia
- Robert K. Lincoln, Esq.
- Martin Schneider
- Sean College

Florida Atlantic University, Department of Economics, Boca Raton, FL
- Dr. William B. Stronge

Deborah E. Flack, Flack and Associates, Tallahassee, FL

Successful Communities Institute, 1000 Friends of Florida, Tallahassee, FL
- James F. Murley, Esq.
- Patricia S. McKay

International Land Policy Research Center, Washington, D.C.
- Frank Schnidman, Esq.

The project staff wishes to acknowledge the cooperation and guidance of Kirby Green, III, Director of the Division of Beaches and Shores, in overseeing the progress of the first phase of this project, for which we are deeply grateful. We also extend our gratitude to the following persons for the time and effort they contributed to reviewing and critiquing a draft of this report:

Dr. Robert G. Dean, Chairman, Coastal and Oceanographic Engineering Department, University of Florida

Wayne Daltry, Executive Director, Southwest Florida Regional Planning Council

Al Devereaux, Bureau Chief, Coastal Engineering and Regulation, Division of Beaches and Shores (DEP)

Dr. David Godschalk, Professor, City and Regional Planning, University of North Carolina at Chapel Hill

Caroline Knight, Florida Coastal Management Program, Department of Community Affairs

Alan C. Pierce, County Planner/Emergency Management Director, Franklin County, FL

Gary T. Ridenour, Director, Brevard County Growth Management Department

Lonnie Ryder, Environmental Administrator, Division of Beaches and Shores (DEP)

Stan Tait, Executive Director, Florida Shore and Beach Preservation Association

Patricia M. Metzger
Project Manager

February, 1994

PRE-STORM PLANNING FOR POST-STORM REDEVELOPMENT:
Policies and Options for Florida's Beachfront Areas

Phase I

Contents

LIST OF APPENDICES

LIST OF TABLES

GLOSSARY

Beach and Dune System: The part of the coastal system extending seaward from the established Coastal Construction Control Line to the depth of normal wave influence on the bottom, including the beach (i.e., the zone of unconsolidated material that extends landward from the mean low-water line to the place where there is marked change in natural or man-made physiographic form, or to the line of permanent vegetation), the dune (i.e., a mound, ridege, or escarpment predominantly made of sandy material), and all other related natural and man-made features.

Beach Enhancement Program: A program, authorized and permitted by the state, to maintain and/or improve the stability of the beach and dune system. Can include planting of dune vegetation and reconstruction of damaged beach and dune system.

Beach Restoration Program: A program, authorized or identified in the State Comprehensive Beach Restoration Plan, to place sand on an eroded beach for the purposes of restoring it as a recreational beach, providing storm protection for upland properties and establishing habitat.

Coastal Construction Control Line (CCCL): Established pursuant to the provisions of Section 161.053, Florida Statutes, to preserve and protect beaches and the coastal barrier dunes adjacent to such beaches from imprudent construction which can jeopardize the stability of the beach-dune system, accelerate erosion, provide inadequate protection to upland structures, endanger adjacent properties, or interfere with public beach access.

Conservation Easements: A legal method that restricts a landowner's actions on property in order to conserve important recreation, environmental, or historical values by acquiring a specific interest.

Critically Eroding Areas: Beachfront areas where development or recreational interests are imminently threatened by erosion processes.

Erosion Control Line: The line, established only in areas with an authorized beach restoration project, determined in accordance with the provisions of ss. 161.141-161.211, Florida Statutes, which represents the landward extent of the claims of the state in its capacity as sovereign titleholder of the submerged bottoms and shores of the Atlantic Ocean, the Gulf of Mexico, and the bays, lagoons and other tidal reaches thereof on the date of the recording of the survey as authorized in s. 161.181, Florida Statutes.

Erosion Control Programs: Beach restoration and preservation-type activities such as inlet sand transfer, dune repairs, dune reconstruction, revegetation, and the construction of dune protective structures in order to mitigate the impacts of erosion on upland structures.

Frontal Dune: The first natural or manmade mound or bluff of sand which is located landward of the beach and which has sufficient vegetation, height, continuity, and configuration to offer protective value.

Hazardous Coastal Areas: In general, beachfront areas that are especially susceptible to high rates of erosion and where erosion and other coastal processes threaten the stability of upland structures.

Major Structures: Houses, mobile homes, apartment buildings, condominiums, motels, hotels, restaurants, towers, other types of residential, commercial, or public buildings, and other construction having the potential for substantial impact on coastal zones.

Non-conforming Structure: Any structure which was not constructed pursuant to a permit issued by the Department of Environmental Protection or which cannot be demonstrated to meet current structural requirements.

Rigid Coastal Structures: Shoreline protection structures that are characterized by their solid or highly impermeable design or construction. Typically included within this category are groins, breakwaters, mound structures, jetties, weirs, seawalls, bulkheads, and revetments (Chapter 16B-41, Florida Administrative Code).

Site-Coverage: Coverage of the shoreline in the shore-parallel and shore-width directions by structures.

State Beach Management Plan Pursuant to Chapter 161.161, Florida Statutes, the Division of Beaches and Shores is to prepare a "comprehensive and long-term plan for the management and restoration of the state's critically eroding beaches." This is to be a strategic plan and serve as a blueprint of what Florida's beaches should look like in the future.

Thirty-year Erosion Projection: The projection of long-term beach and coast recession occurring over a period of thirty years based on shoreline change rate information obtained from historical measurements.

EXECUTIVE SUMMARY

Florida's 787 miles of sandy beaches and shorelines represent an unparalleled environmental and economic asset for the state. However, a significant portion of the state's beaches are experiencing critical erosion which threatens substantial development and recreational interests. The Beach and Shore Preservation Act directs the Division of Beaches and Shores (within the Department of Environmental Protection, or DEP) to prepare a comprehensive and long-term plan for the management and restoration of the state's critically eroding beaches. According to the statutes, the plan must identify "alternative management responses ... to prevent inappropriate development and redevelopment on migrating beaches, and consider beach restoration and renourishment, armoring, relocation and abandonment, dune and vegetation restoration, and acquisition" (s.161.161(1)(j)).

This report represents the completion of the first phase of a three-year project to develop, test, and implement a post-storm redevelopment policy for Florida's beachfront areas. Sections 1 and 2 summarize the background and purpose of the first phase of this project. The three phases of the project include:

PHASE I: Draft Policy and Guidelines for Implementation
PHASE II: Test and Revise Policy and Guidelines
PHASE III: Policy Adoption and Implementation

This report presents a proposed policy to guide redevelopment of the state's beachfront areas and guidelines for implementing this policy, both before and after a major storm. This policy is to be included as a preservation/restoration component of the state's Beach Management Plan and targets areas seaward of state-established jurisdictional lines known as Coastal Construction Control Lines (CCCLs).

While most post-storm redevelopment will be to pre-existing uses and densities pursuant to the siting and construction standards of Chapter 161, Florida Statutes, or local codes, other post-storm redevelopment options for specific sites may include elevation or setback of structures, reduction of site coverage, and in a few areas, acquisition of hazard-prone properties. The rebuilding period following a hurricane or major storm event presents an opportunity to implement these

redevelopment options. However, unless a plan exists and preparations have been made prior to the storm, the implementation of any of these options will be unlikely due to the rush to restore normalcy after a destructive storm.

A Post-storm Redevelopment Policy for Beachfront Areas

Section 3 explains the purpose for adopting and implementing a post-storm redevelopment policy for beachfront areas. Section 4 presents the objectives and specific policies of the overall policy. The four main objectives of the Post-storm Redevelopment Policy proposed in this report include:

(1) protection of the beach-dune system during redevelopment;
(2) mitigation of coastal hazards;
(3) maintenance or enhancement of economic value of beachfront areas; and
(4) coordination of policy and regulation among agencies responsible for protection and management of coastal resources during the post-storm redevelopment period.

The proposed policy and implementation guidelines are intended to enhance the existing coastal construction permitting program so that permitting decisions are consistent with long-term goals for beach management and redevelopment of beachfront areas. Given the shared responsibilities of the state and local governments to plan for post-storm redevelopment in coastal areas, the two agencies must work jointly to develop post-storm redevelopment plans that marry beach management objectives and siting and design standards with local land use, subdivision, and density policies and standards.

Pre-storm Planning and Implementation

Implementation of any post-storm redevelopment policy must begin before the storm. Section 5 of this report describes a pre-storm process to determine the applicable standards for redevelopment and to identify appropriate post-storm beach management options to meet these standards. The process begins with the assessment of existing physical, environmental, economic, and policy/regulatory conditions of beachfront areas in order to answer two critical questions: (1) *Can the beachfront area be redeveloped pursuant to the provisions of Chapter 161, Florida Statutes?* (2) *If not, does another viable option exist that would allow redevelopment in accordance with the Post-storm Redevelopment Policy?* Following the determination of post-storm redevelopment standards and

identification of options, a pre-storm strategy must be initiated if a redevelopment scenario different from existing development conditions is envisioned.

The Beach Management Plan should establish five categories of post-storm beach management options for planning purposes. These categories are indicated below.

CATEGORIES OF POST-STORM BEACH MANAGEMENT OPTIONS

CATEGORY 1: Major structures may be rebuilt according to construction and siting requirements and restrictions pursuant to Chapter 161, Florida Statutes, and its implementing regulations.

CATEGORY 2: Major structures may be rebuilt according to construction and siting requirements and restrictions pursuant to Chapter 161, Florida Statutes, and its implementing regulations, pending authorized beach restoration or other beach enhancement program.

CATEGORY 3: Reduction of site coverage of beachfront area.

CATEGORY 4: Reduction of site coverage of beachfront area, pending authorized beach restoration or other beach enhancement program.

CATEGORY 5: Relocation of structures landward of the active beach and frontal dune.

Jointly, Categories 1 and 2 represent the continuation of current coastal planning and regulatory practices supported by the preservation/restoration component of the state Beach Management Plan. Category 1 represents "business as usual" for most of Florida's beaches and it is expected that most beachfront areas will fall within this category. Category 2 also represents redevelopment to pre-existing uses, but also acknowledges that post-storm site conditions will require some type of beach enhancement. This category will apply to areas that are already part of an existing beach restoration project and to areas that need some type of future nourishment.

Categories 3, 4, and 5 include far more extreme options and will apply only to beachfront segments where reasonable post-storm redevelopment by any standard

cannot accommodate pre-storm uses or densities. Designation will be limited to sites:

* where redevelopment cannot be economically justified;
* which are highly vulnerable to hazards;
* where supporting infrastructure cannot be reasonably provided;
* where development would adversely impact the beach-dune system;
* where structures would impede natural migratory processes.

Employing these restrictive categories will require the full cooperation of local governments to designate supportive future land uses and densities and a variety of incentives to ensure voluntary participation of affected property owners. Appendix E of this report describes a pre-storm process to implement redevelopment options in Categories 3, 4, and 5. This process stresses the importance of thorough pre-storm preparation and the degree of cooperation needed among state and local officials and affected property owners.

Identification of post-storm beach management options will be based on minimum criteria which reinforce the proposed Post-storm Redevelopment Policy. Section 5.1.3 presents a matrix which depicts the minimum criteria for each category of post-storm options. These criteria are designed to guide the identification of environmentally and economically feasible post-storm beach management options that are compatible as possible with upland characteristics and conditions. They do not preempt the current permitting criteria and standards for construction and excavation seaward of established CCCLs. Rather, they are minimum criteria for areawide redevelopment that complement existing criteria for granting permits for structures on single parcels.

Post-storm Reassessment of Beach Management Options

Directly following a major storm, the actual degree and extent of storm damage to the beachfront area must be surveyed in order to determine if planned post-storm beach management options need to be modified. Storm impacts to the beach-dune system and structures may be more or less severe than projected. In these cases, post-storm beach management options may need to be reconfirmed or revised due to the actual extent of damage. Section 5.2 outlines steps for post-storm reassessment of beach management options. This process will be more fully developed during Phase II. In addition, Appendices D and F explore the implications of determining "substantial damage" to structures for post-storm

permitting and the impacts of proposed changes to the National Flood Insurance Program on coastal hazard mitigation programs.

Integrating the Beach Management Plan with Local Comprehensive Plans

Florida's inter-agency approach to coastal management represents one of the biggest challenges to implementing an effective post-storm redevelopment program for beachfront areas. Unless a mandatory linkage between a statewide post-storm redevelopment policy and the coastal management elements of local comprehensive plans (adopted pursuant to Chapter 163, Florida Statutes) can be established, the effectiveness of any redevelopment strategy will be severely limited. Local plans must provide for compatible land uses and consistent densities in vulnerable beachfront areas to complement the planning, siting, and construction requirements of the state's beach management program pursuant to Chapter 161, Florida Statutes. Thorough implementation of the proposed Post-storm Redevelopment Policy for Beachfront Areas will depend on the addition of supporting policies to coastal management elements when local governments update and revise their plans beginning in 1995.

However, more work needs to be conducted to determine the data, planning, and funding requirements of local governments to operationalize strategic redevelopment plans for coastal areas. Coastal counties and municipalities will need detailed policy guidance and technical assistance to develop coastal management plans that complement the state's Beach Management Plan. The second phase of this project (to be completed in December, 1994) will address the capacity at the local level to plan for coastal redevelopment as the process for identifying post-storm beach management options is applied and tested in three coastal counties. The policy and implementation guidelines proposed in this report then will be revised based on the outcome of these "test" applications.

Section 1. INTRODUCTION AND BACKGROUND

Florida's beaches constitute one of the state's most important natural resources, for both environmental and economic reasons. Environmentally, a stable beach and dune system provides the first line of defense against storms and therefore performs valuable protective functions for life and property. The storm protection afforded by a viable beach and dune system reduces loss of life, property damage, impacts to the tax base, and storm recovery costs, a fact acknowledged in the state's Beach and Shore Preservation Act (Chapter 161, Florida Statutes). Economically, a stable beach and dune system serves as an unparalleled recreational resource and is critical to supporting the state's tourism industry. Finally, a stable beach and dune system is the most economical and cost-effective form of upland protection from severe storm damage.

However, 232 miles, or 29 percent, of the state's shoreline are experiencing critical erosion which threatens substantial development and recreational interests.[1] These beachfront areas represent a critical focus for public policy and action to minimize the potential for property damage and loss of life. The Beach and Shore Preservation Act directs the Division of Beaches and Shores (within the Department of Environmental Protection, or DEP) to prepare a comprehensive and long-term plan for the management and restoration of the state's critically eroding beaches. According to the statutes, the plan must identify "alternative management responses ... to prevent inappropriate development and redevelopment on migrating beaches, and consider beach restoration and renourishment, armoring, relocation and abandonment, dune and vegetation restoration, and acquisition" (s.161.161(1)(j)). The legislatively mandated statewide beach management plan will serve as a blueprint of what Florida's beaches should look like in the future.

Obviously, post-storm opportunities for redevelopment have the potential to greatly influence this future scenario. Any plan for strategically managing the state's beaches must include a preservation/restoration component to guide post-storm redevelopment in order to accomplish the following: (1) consistency between beach management and state resource protection policies; and (2) direction to local governments in formulating supportive comprehensive plan goals and objectives for hazard mitigation, post-disaster redevelopment, and coastal management.

---

[1] Florida Department of Natural Resources, *Beach Conditions in Florida*, September 1992.

Until Hurricane Andrew struck south Dade County in 1992, no hurricane had caused major property damage in Florida since 1964.[2] Although the dynamics and direction of Hurricane Andrew did not result in much damage to the immediate coastal areas of south Dade County, the degree and extent of damage to inland structures illustrated that comparable damage could occur anywhere along the state's coast. Florida's beachfront areas need to be prepared for the next hurricane, or even major storm, and should envision how to redevelop the area, particularly in light of policies and regulations adopted over the past two decades to protect the beach and dune system.

The Florida Department of Natural Resources (now DEP) prepared in March, 1993, a review of existing federal and state programs relating to post-disaster redevelopment. The authors of the final report in *Beachfront Redevelopment* concluded that in Florida "standards and criteria applying to beachfront redevelopment following major storm events are not clearly delineated."[3] The absence of post-storm redevelopment standards and criteria practically guarantees that the urgency to restore normalcy will overcome the rationale to rebuild more appropriately if no plan for alternative beachfront redevelopment is ready to implement after the storm. A summary review of literature on post-disaster hazard mitigation and redevelopment revealed that in the past the common post-storm response in Florida and other coastal states has been "a continuation of past practices and sympathetic emergency disaster relief."[4] (See *Appendix B* for a bibliography.)

The Department of Community Affairs (DCA) is in the process of developing a proposed comprehensive post-disaster redevelopment policy for the state. To the extent possible, the proposed post-storm redevelopment policy for beachfront areas was prepared taking into consideration the work underway by the DCA on the state's emerging comprehensive policy for post-disaster redevelopment. At a minimum, though, this policy is intended to be included as a preservation/restoration component of the state's Beach Management Plan and to further existing state policy and regulation as it applies to beachfront areas seaward

---

[2] "DCA Secretary Addresses State's Emergency Management Needs," *Florida Planning*, July 1991, Vol. II, No. 11, p. 6. Although Hurricanes Elena and Kate together caused an estimated $90.5 million in public and private damages in 1985, this figure seems minor in comparison to the over $30 billion in property damage as a result of Hurricane Andrew.

[3] Florida Department of Natural Resources, Office of Policy and Planning, *Beachfront Redevelopment*,, March 1993, p. 1.

[4] Griggs, Gary B., and Rogers E. Johnson, "Impact of 1983 Storms on the Coastline," *California Geology*, August 1983, p.172.

of established Coastal Construction Control Lines (CCCLs). Existing state policies and regulations applying to redevelopment of beachfront areas are summarized in *Beachfront Redevelopment* and *Post Disaster Redevelopment Planning: Model Plans for Three Florida Scenarios,* prepared for the state's Office of Coastal Management by the South Florida Regional Planning Council in 1990. These state policies and regulations are not repeated here. However, legal and administrative issues of concern to implementing the post-storm redevelopment policy proposed in this document are addressed below in *Appendix C.*

Section 2. PURPOSE OF PROJECT (Phase I)

The first phase of this project has two purposes. The first purpose is to develop a policy to guide redevelopment of the state's beachfront areas, particularly during a post-storm period when the opportunity exists to replace non-conforming uses, reconstruct or redesign structures to minimize impacts to the beach and dune system, reduce the intensity and amount of upland development, and in a few areas to acquire hazard-prone properties. For purposes of this report, "beachfront areas" are defined as areas seaward of the established CCCLs in the state's 25 counties with sandy beaches. These counties are listed in *Appendix A*.

The second purpose of this project is to develop a process for implementing this policy both before and after a major storm. Specifically, a process is described for presenting as part of the state's Beach Management Plan economically and environmentally feasible post-storm management options so that preparations can be made in anticipation of a major hurricane or coastal storm and further deterioration of site conditions. This process will be tested during Phase II of this project and necessary revisions will be made. Since coastal storm events and hurricanes are the most frequent type of disaster experienced in beachfront areas, this policy framework and implementation guidelines focus on post "storm" rather than post "disaster" redevelopment.

This report is organized into Sections 1 through 7 which describe the need and basis for a post-storm redevelopment policy for beachfront areas; present a proposed Post-storm Redevelopment Policy for Beachfront Areas; outline a process for implementing this policy both pre- and post-storm; present a methodology for comparing the costs and benefits of alternative beach management options; and outline the objectives for Phase II of this project. Appendices A through F support the main sections of this document and include a presentation of the legal context of a post-storm redevelopment program, standards for determining whether structures are subject to post-storm permitting requirements, an example of a pre-storm planning process, and a summary of proposed changes to the National Flood Insurance Program and potential impacts to a post-storm redevelopment program.

Section 3. PURPOSE FOR PROPOSED POST-STORM REDEVELOPMENT POLICY AND BEACH MANAGEMENT OPTIONS

The period following Hurricane Andrew's landfall in August, 1992, demonstrated quite painfully the need for preparation in anticipation of the "big one." Fortunately, structures within the immediate coastal areas received minor damage relative to structures in inland areas. However, rebuilding in non-coastal flood-prone areas was stalled until local and federal officials determined which standards for issuing permits to rebuild would be applied.[5] Aside from the need to prepare detailed plans for immediate response and restoration of vital utilities and access routes, all beachfront communities must anticipate how they will respond to issues brought to light during the long-term rebuilding period.

As stated in Section 1, a number of beachfront areas are experiencing critical erosion and may need to be rebuilt differently after a major storm in order to protect the beach and dune system and upland structures from future hazards. Pre-storm planning actions must be undertaken to identify affected beachfront segments and develop post-storm beach management options and criteria for rebuilding so that public policy indecision and inter-agency conflicts do not delay the redevelopment process or prevent any desire to rebuild better. While most post-storm redevelopment will be to pre-existing uses and densities pursuant to the siting and construction standards of Chapter 161, Florida Statutes, or local codes, other post-storm redevelopment options for specific sites may include elevation or set back of structures, reduction of site coverage, and acquisition of hazard-prone properties.

Planning for post-storm redevelopment and hazard mitigation currently is not practiced statewide in Florida. The Governor's Environmental Land Management Study Committee (ELMS III) issued its Final Report in December, 1992, and pointed out that in spite of existing provisions in Chapter 163, Florida Statutes, for post-disaster redevelopment plans, no local government has prepared one. [6] The ELMS III committee recognized that the impacts of Hurricane Andrew emphasized the importance of post-disaster redevelopment planning and recommended that the Legislature provide fiscal incentives for joint planning

---

[5] See *Appendix D* for a description of the Federal Emergency Management Agency's determination of "substantially damaged" structures and requirements for reconstruction and for a brief discussion of how these standards were applied in Dade County after Hurricane Andrew.

[6] However, a recent investigation of the effectiveness of the state planning mandates indicated that of the eleven states with planning mandates, Florida devoted the most resources ($28,500 per affected jurisdiction) toward the implementation of the hazards components of the mandate.

efforts in preparing plans. This process represents an opportunity for the state to work with local governments to identify hazard-prone beachfront areas, develop alternative redevelopment options, and devise strategies for implementing plans to rebuild differently.

The Beach and Shore Preservation Act (Chapter 161, Florida Statutes), the State Comprehensive Plan (Chapter 187), the Florida Coastal Management Act (Chapter 380), and the Local Government Comprehensive Planning and Land Development Regulation Act (Chapter 163) constitute the public purpose for developing and implementing a state policy to guide the redevelopment of beachfront areas. These laws clearly indicate that the following objectives must be upheld during the post-storm redevelopment period and adequately addressed as part of a statewide comprehensive beach management plan: (1) protection of the beach and dune system during redevelopment; (2) mitigation of hazards due to hurricanes and coastal storm events; (3) maintenance or enhancement of economic development assets of beachfront areas; and (4) coordination of policy with other agencies responsible for protection and management of coastal resources during the post-storm redevelopment period.

Table 1, below, summarizes the public purpose for adoption and implementation of a policy to guide post-storm redevelopment in beachfront areas.

TABLE 1.

Public Purpose of a Post-storm Redevelopment Policy for Florida's Beachfront Areas

Beach and Dune System Protection
To protect, preserve, and restore beach and dune systems
To insure that the coastal environment is protected during the post-storm recovery period
Hazard Mitigation
To discourage the redevelopment of critically eroding shorelines
To reduce vulnerability of life and property to coastal hazards
Economic Development
To maintain or enhance the economic and recreational assets of the state's beach and dune systems
Intergovernmental Coordination
To further coordinate state policies for planning, management, and acquisition of beachfront areas
To assist local governments in developing consistent and effective post-disaster redevelopment policies for beachfront areas

In order for a post-storm redevelopment policy to be effective, the state (i.e., Division of Beaches and Shores) must identify beach management options to be included as a component of the Beach Management Plan and to be implemented during the post-storm rebuilding period. Pre-storm planning for post-storm beach management is essential also to ensuring that local governments identify more specific post-storm redevelopment options for the upland areas that are consistent with the Beach Management Plan.

Furthermore, the state must identify beach management options prior to the storm so that local governments can plan accordingly, adopt supporting policies as part of the local comprehensive plans, and educate residents about the long-term impacts of these policies. Pre-storm planning is important particularly in those

beachfront areas where conditions might preclude rebuilding to the existing level and intensity of development. The details of any beach restoration projects, setback of structures, replatting of beachfront lots, or acquisition of parcels must be pre-arranged with local officials and affected property owners so that a public policy impasse about post-storm responses does not preempt the brief post-storm opportunity to rebuild better. The identification of post-storm beach management options can also streamline the post-storm permitting process in areas where the state has outlined the beach management conditions that will apply to the rebuilding of affected structures.

3.1. Intergovernmental Coordination of Post-storm Redevelopment Polices

Florida's inter-agency approach to coastal management represents one of the biggest challenges to developing and implementing an effective post-storm redevelopment policy for beachfront areas. Although the state concentrates the regulation of construction along the state's sandy beaches in the Division of Beaches and Shores (within DEP), it assigns to local governments and other state agencies the planning and regulation of other land use activities (such as subdividing, zoning and infrastructure development) within and adjacent to beachfront areas. More specifically, responsibilities for planning and managing post-disaster redevelopment in coastal areas are shared among several agencies with minimally effective intergovernmental coordination and no clear links between beach management, emergency management, coastal infrastructure provision, and local land development regulation. Most counties have developed detailed plans for post-storm response and recovery but few if any have developed plans for the long-term redevelopment period.

The protection of coastal development and beach and dune systems requires a coordinated effort between the state (specifically, the Division of Beaches and Shores) and local governments. The Local Government Comprehensive Planning and Land Development Regulation Act (Chapter 163, Florida Statutes) requires local governments to prepare post-disaster redevelopment plans as part of their comprehensive plans. Furthermore, the implementing rule, Minimum Criteria for Review of Local Government Comprehensive Plans and Determination of

Compliance[7] requires that the coastal management element of the comprehensive plan provide an analysis of post-disaster redevelopment, which includes beach and dune conditions, land use in coastal high hazard areas, and shore protection structures, and identify measures to reduce exposure to hazards, such as relocation, structural modification, and acquisition.

The post-storm redevelopment policy for beachfront areas proposed herein is intended for inclusion in local post-disaster redevelopment plans and coastal management elements when local governments update and revise their plans beginning in 1995. A survey of local comprehensive plans requiring coastal management elements revealed that roughly 40 percent have failed to address the repair or replacement of storm-damaged infrastructure in coastal high hazard areas and approximately 50 percent lacked provisions addressing post-disaster redevelopment and hazard mitigation.[8] These serious inadequacies within the coastal management elements present a real challenge for effective post-disaster redevelopment planning. The local planning evaluation and appraisal report (EAR) process and attendant plan amendments is an opportunity to significantly improve these existing weaknesses.

The first step is for the state to adopt a comprehensive policy for post-disaster redevelopment, which includes beachfront areas, so that local governments can adopt and apply more consistent beach management policies. Local plans must provide for compatible land uses and consistent densities in vulnerable beachfront areas to complement the planning, siting, and construction requirements of the state's beach management program pursuant to Chapter 161, Florida Statutes. In fact, unless a statutory linkage between a state post-disaster redevelopment policy for beachfront areas and the coastal management elements of local comprehensive plans can be established, the effectiveness of any redevelopment strategy will be severely limited.

In December 1990, the South Florida Regional Planning Council, through a grant from the state's Office of Coastal Management, prepared and recommended three model local post-disaster redevelopment plans and strategies for implementation. The SFRPC study pointed out that "without a (post-disaster redevelopment) process in place, inefficient and inconsistent decision making may

---

[7] Section 9J-5.012, Florida Administrative Code.

[8] Bob Nave, Director of Emergency Management, Florida Department of Community Affairs, Memorandum to Linda Loomis Shelley, Secretary, July 15, 1992, p.8.

result in poor land use decisions in the turmoil of post-disaster efforts."[9] This point corresponds to conventional thinking that complex state mandates without adequate requirements and incentives for compliance will result in weak implementation.[10]

3.2. Baseline Assumptions

This post-storm redevelopment policy is based on the following assumptions, which are in some cases reflected in current state statute and policy found in the Beach and Shore Preservation Act, the Florida Coastal Management Act, the State Comprehensive Plan, and the Local Government Comprehensive Planning and Land Development Regulation Act. These assumptions, as well as the subsequent post-storm redevelopment policy and redevelopment options, fall under four general headings: (1) Beach and Dune System Protection, (2) Hazard Mitigation, (3) Economic Development, and (4) Intergovernmental Coordination.

---

[9] South Florida Regional Planning Council, *Post Disaster Redevelopment Planning: Model Plans for Three Florida Scenarios*, December 1990, p. i.

[10] Burby, Raymond J., et al., "State Planning Mandates: How Well Are They Working?" Working Paper No. 18, September 1993 (New Orleans: University of New Orleans, College of Urban and Public Affairs).

TABLE 2.

Baseline Assumptions

Beach and Dune System Protection

1. Beach and dune protection is inseparable from hazard mitigation. Both objectives are prerequisites for planning for effective post-storm redevelopment.

2. A well-established, stable beach-dune system is the most environmentally compatible and recreationally beneficial form of upland protection from severe storm damage.

3. Post-storm impacts to the beach and dune system are primarily the result of inappropriate location of structures.

4. CCCLs adequately define the active beach and dune system. Planning and regulatory decisions affecting post-storm redevelopment of the state's critically eroding shorelines should focus upon areas seaward of Coastal Construction Control Lines (CCCL) where areas are low-lying, where erosion rates are high, or where existing development is extensive.

5. "Removing coastal properties from the pool of developable acreage reduces the adverse land use and environmental impacts the state coastal zone management program is attempting to eliminate or diminish, while ... minimizing public expenditures and reducing risk to life and property in storm-prone coastal areas" (s.380.21(4), Florida Statutes). Acquisition of coastal properties should include both undeveloped and developed properties.

TABLE 2.

Baseline Assumptions (cont'd)

Hazard Mitigation

1. The state and local governments will take all reasonable preventive measures in order to reduce the consequences of natural disasters to life and property.

2. The beach and dunes provide the first line of defense against storms and therefore perform valuable protective functions for life and property. The storm protection afforded by a viable beach and dune system reduces loss of life, property damage, impacts to the tax base, and storm recovery costs.

3. Inappropriate development impacting the active beach and dune system:
   a. decreases the system's potential for mitigating storm hazards;
   b. increases the risks to lives and property; and
   c. increases costs to the public.

4. Existing structures along the state's critically eroding shorelines (231.9 miles, or 29 percent of the state's sandy beaches) that are not constructed to current standards are highly susceptible to storm damage.

5. Older structures, particularly those structures permitted prior to adoption of state coastal construction codes, generally will incur greater damage and destruction during major storms.

6. State and local land acquisition programs, although usually established for other purposes, can contribute toward the acquisition of hazard-prone coastal properties.

TABLE 2.

Baseline Assumptions (cont'd)

Economic Development

1. Viable beach and dune systems are critical to the state's tourism industry and overall economic well-being.

2. A well-established, stable beach-dune system is the most economical form of upland protection from severe storm damage.

3. Inappropriate development impacting the active beach and dune system diminishes the economic value of the resource for recreation.

Intergovernmental Coordination

1. Planning for post-storm redevelopment will require consistency between state and local policies for post-storm redevelopment, resource protection, and coastal management.

2. Redevelopment of beachfront areas after a major storm event or hurricane will require a coordinated inter-agency response, including the Division of Beaches and Shores (DEP) and affected local governments.

Section 4. POST-STORM REDEVELOPMENT POLICY FOR BEACHFRONT AREAS

A post-storm redevelopment policy for the state's beachfront areas should fulfill the objectives for Beach and Dune System Protection, Hazard Mitigation, Economic Development, and Intergovernmental Coordination. It is intended that the state will adopt this policy as a preservation/restoration component of the comprehensive Beach Management Plan and implement the policy through the existing planning and permitting programs of the Division of Beaches and Shores (DEP). This policy should shape the pre-storm identification of post-storm beach management options for areas seaward of established CCCLs. In addition, as described above, the policy is intended to provide a framework for development of supportive post-disaster redevelopment policies by local governments, to be included in coastal management elements of local comprehensive plans.

The statutory basis and authority for this proposed policy is discussed in *Appendix C.*

An asterisk (*) at the end of a policy statement indicates that implementation will require coordination and cooperation between the Division of Beaches, other state agencies and local governments. These are policies which cannot be implemented entirely through the existing coastal permitting programs.

Post-storm Redevelopment Policy for Beachfront Areas

Objective A. Beach and Dune System Protection
In order to protect, preserve, and restore beach and dune systems and to insure that the coastal environment is protected during the post-storm rebuilding period, the state shall implement the following policies:

Policy A.1. All development, redevelopment and other activities which significantly alter beach and dune systems shall be discouraged.

Policy A.2. All efforts shall be made to maintain and enhance existing dunes.

Policy A.3. All development and redevelopment, subject to state permitting requirements, shall require a sufficient protective buffer between existing dunes and structures.

Policy A.4. Guided by parcel size and configuration, heavily storm-damaged structures shall be rebuilt as far landward as possible, substantially behind the frontal dune.

Policy A.5. For critically eroding areas, beach renourishment, dune restoration and other beach enhancement programs, rather than rigid structural stabilization, shall be the preferred options for resource management and hazard mitigation. Where viable, restoration of natural dunes shall be required as a condition for all coastal development and redevelopment subject to state permitting requirements. Post-storm beach management options that include beach restoration as a condition for rebuilding structures shall accommodate public access to the beaches, if public funds are used for restoration.

Policy A.6. Storm-damaged rigid coastal structures shall be replaced only as a last resort to protect eligible structures (as defined in Chapter 16B-33, Florida Administrative Code) and only after all other alternatives are determined not to be feasible.

Policy A.7. Beachfront redevelopment shall provide for the protection of marine turtles and other coastal species, native salt-resistent vegetation, and endangered vegetative species.

Policy A.8. To the greatest extent possible, the state shall encourage that the subdivision of lands containing primary dune systems provide lots of sufficient size to permit development and redevelopment to be accommodated without degradation of the functions of the beach and dune system. *

Policy A.9. The state should consider granting less restrictive permit conditions and a streamlined permitting process if redevelopment proposals include the acquisition and replatting of lots that cannot be redeveloped without impacts to the primary dune system due to their size or configuration.

Policy A.10. State and local acquisition programs should target hazard-prone beachfront properties where development or redevelopment cannot occur sufficiently landward of the frontal dune, would jeopardize the stability of the beach and dune system, and would accelerate erosion. *

Policy A.11. The state shall consider the ability of private or public agencies to acquire and replat parcels in beachfront areas where storm-damaged structures cannot be rebuilt without impacts to the beach and dune system due to size or configuration of beachfront lots.*

Post-storm Redevelopment Policy for Beachfront Areas

Objective B. Hazard Mitigation

In order to discourage the redevelopment of critically eroding shorelines and to reduce vulnerability of life and property to coastal hazards, the state shall implement the following policies:

Policy B.1. The state shall encourage and participate in the maintenance, restoration and enhancement of Florida's beaches and dunes in order to minimize the impacts of natural disasters to life and property.

Policy B.2. All development and redevelopment in hazardous coastal areas shall be limited in order to protect lives and property from coastal storms and hazards and to maintain the viability of the beach and dune system. Post-storm redevelopment shall avoid extensive rebuilding and intensification of land uses in critically eroding areas and encourage reductions in the amount and intensity of development in order to reduce exposure of lives and property to coastal hazards.

Policy B.3. Proposed redevelopment options shall attempt to minimize public expenditure and reduce risk to public infrastructure and facilities along critically eroding beaches. *

Policy B.4. The state shall encourage relocation of structures landward of critically eroding areas and prevent intensification of land uses in hazardous coastal areas. State policies, expenditures, and programs shall encourage reductions in the amount and intensity of development and redevelopment in hazardous coastal areas.

Policy B.5. The state shall require in beachfront areas replacement of non-conforming uses and eliminate unsafe conditions and inappropriate uses as opportunities arise.

Policy B.6. The state shall identify those beachfront areas that shall be subject to post-storm regulations and acquisition in order to reduce loss of life and damage to property.

Post-storm Redevelopment Policy for Beachfront Areas

Objective C. Economic Development

In order to maintain or enhance the economic and recreational assets of the beach and dune systems during post-storm redevelopment, the state shall implement the following policies:

Policy C.1. All decisions to regulate post-storm redevelopment shall consider the economic costs and benefits of redeveloping the property and the feasibility of restoring the beach-dune system.

Policy C.2. Value of the beachfront area to the local and regional economy based on its uses and structures shall be considered in determining post-storm redevelopment options.

Policy C.3. Costs to repair or replace infrastructure serving beachfront areas shall be considered before proposing redevelopment options that allow replacement of infrastructure to pre-storm conditions.

Policy C.4. The state shall consider the long-term benefits of alternative uses of the target beachfront area when identifying post-storm beach management options.

Policy C.5. Incentives, such as taxation strategies, subsidies, and transfers of development rights, shall be provided to encourage voluntary relocation of structures from and public acquisition of critically eroding and otherwise hazardous beachfront areas.

Policy C.6. Post-storm beach management options that include acquisition of beachfront properties after a storm shall consider the economic costs and benefits of acquisition, including recreational opportunities, compatibility with adjacent public uses, and hazard mitigation.

Policy C.7. Post-storm beach management options that include acquisition of hazard-prone beachfront areas should identify available sources of funding, such as state programs and trust funds, federal grants, local land acquisition programs, and non-profit organizations.

Policy C.8. Alternatives for land acquisition other than fee simple should be considered, such as less-than-fee simple, conservation easements, and purchase of development rights.

Post-storm Redevelopment Policy for Beachfront Areas

Objective D. Intergovernmental Coordination

In order to further coordinate state policies for resource protection, coastal management, and post-disaster redevelopment and to assist local governments in developing consistent and effective post-disaster redevelopment policies for beachfront areas, the state shall implement the following policies:

Policy D.1. Post-storm beach management options for beachfront areas shall be consistent, to the extent possible, with use, density and other land use policies and standards contained in local government comprehensive plans.

Policy D.2. Post-storm beach management options should be consistent, to the extent possible, with local policies to relocate or reduce the capacity of infrastructure serving beachfront areas.

Policy D.3. Post-storm beach management options shall consider local priorities for acquiring coastal properties to promote hazard mitigation, public recreation, and resource management objectives.

Policy D.5. All post-storm redevelopment options shall be consistent with an approved management plan for an inlet project that affects the coastal processes of the target beachfront area.

Policy D.6. Post-storm redevelopment options should consider impacts to local evacuation routes, as determined by emergency management officials. *

Policy D.7. The state shall encourage local governments to adopt minimum parcel size and configuration requirements on the subdivision of lands containing beach and dune systems. *

Policy D.8. The state shall discourage platting of beachfront properties and encourage replatting to accommodate post-storm relocation of structures landward of the active beach and frontal dune. *

Section 5. IMPLEMENTATION OF A POST-STORM REDEVELOPMENT POLICY FOR BEACHFRONT AREAS

Although this policy applies to the post-storm redevelopment period, its implementation must occur primarily through pre-storm planning actions. However, since predicting the impacts of a hurricane is not always accurate, a streamlined, post-storm process is also necessary to reconfirm or revise pre-storm plans depending on the actual extent of storm damage. Two processes to implement the Post-storm Redevelopment Policy are outlined below. The first process, Pre-storm Identification of Post-storm Beach Management Options, assesses existing conditions and identifies post-storm beach management options for beachfront segments prior to a storm event and, if necessary, appropriate implementing actions. The second process, Post-storm Assessment of Beach Management Options, assesses the actual degree and extent of storm damage to the beachfront area to determine if options identified prior to the storm need to be reassessed and modified as necessary.

5.1. **Pre-storm Identification of Post-storm Beach Management Options**

5.1.1. Purpose

The Pre-storm Identification process is intended to evaluate the conditions of an entire beachfront area and address the following questions: What kind of upland redevelopment can the beach and dune system sustain? How can the beach-dune system be managed to mitigate the impacts of future hazards? Will it be economically feasible to repair or replace damaged infrastructure after a storm? Will beach management be consistent with other long-range plans for local redevelopment, inlet maintenance, and coastal lands acquisition?

The Pre-storm Identification process resembles the Division of Beaches and Shores' process for evaluating requests for permits for construction seaward of the CCCL. Both processes rely on generally the same data sources and address the same issue -- impacts of the siting of structures on the beach and dune system. However, the Pre-storm Identification process is intended for planning, not permitting, purposes and applies to segments of beachfront areas rather than single parcels of property. More importantly, though, this process addresses the broader dimensions of resource management and comprehensive planning that transcend the increments dictated by the framework of the existing CCCL permitting process.

The outcome of this process will be the identification of a category of redevelopment options for segments of beachfront. These categories will be used for planning purposes as part of the state's Comprehensive Beach Management Plan and should be used by local governments to guide review and revision of coastal management elements contained in their comprehensive plans. These revisions to the coastal management elements could be made at the time each local government prepares its Evaluation and Appraisal Report (EAR) and the corollary plan amendments beginning in 1995.

5.1.2. Categories of Post-storm Beach Management Options and Minimum Criteria

In general, five categories of options exist for post-storm beach management. (See *Table 3,* below.) These categories are strategic planning tools that outline areawide conditions for post-storm beach management and guide permitting requirements for rebuilding structures. These categories are intended to be broad enough to allow local governments to develop a variety of more site-specific options for redevelopment

For example, redevelopment of a beachfront area identified as a "Category 3" area may require an overall reduction in site coverage, but the degree of reduction will depend on particular physical conditions of the site and may be accomplished through a variety of options (e.g., reassembly or replatting of lots, cluster development, and modification of footprint of structure(s)). Other factors, such as local land use and site development requirements, infrastructure replacement policies, and the real estate market, will determine the most viable redevelopment option for the beachfront area. In other words, the state's post-storm beachfront redevelopment policy and criteria will serve as the backdrop for more detailed, locally determined redevelopment plans and regulations.

TABLE 3.

Categories of Post-storm Beach Management Options

CATEGORY 1 Major structures may be rebuilt according to construction and siting requirements and restrictions pursuant to Chapter 161, Florida Statutes, and its implementing regulations.
CATEGORY 2 Major structures may be rebuilt according to construction and siting requirements and restrictions pursuant to Chapter 161, Florida Statutes, and its implementing regulations, pending authorized beach restoration or other state-recognized beach nourishment program.
CATEGORY 3 Reduction of site coverage of beachfront area
CATEGORY 4 Reduction of site coverage of beachfront area, pending authorized beach restoration or other state-recognized beach nourishment program.
CATEGORY 5 Relocation of structures landward of the active beach and frontal dune.

The state coastal construction permitting program, established in the early 1970s, ensures the reasonable use of private property coupled with prudent building standards which promote public safety and enhance beach and dune preservation. This post-storm beach management option, depicted as **Category 1**, represents "business as usual"for most of Florida's beaches -- good coastal development as part of an existing, developed urban beachfront.

Category 2, like Category 1, represents redevelopment to pre-existing uses, but also acknowledges that, based on historical erosion trends and current shoreline conditions, post-storm site conditions will require some type of beach enhancement activity -- most likely beach restoration or renourishment of a previously restored beach. This category includes areas that are already part of an existing beach restoration project as well as beachfront segments where property owners, local

governments, and the state recognize the need for some type of future nourishment activity.

Jointly, Category 1 and Category 2 represent the continuation of current coastal planning and regulatory practices supported by the preservation/restoration component of a statewide beach management plan.

Category 3 (Reduce site coverage), **Category 4** (Reduce site coverage pending authorized beach restoration or other enhancement project), and **Category 5** (Relocate structures landward of active beach and frontal dune) include far more extreme post-storm beach management options. Even before this proposed post-storm redevelopment policy and minimum criteria are field-tested during this project's second phase, it is anticipated that these options will have minimal applications. Designation of these three categories will be limited to situations which cannot be economically justified and sites which are highly vulnerable to hazards, where supporting infrastructure cannot be reasonably provided, where development would adversely impact the active beach-dune system, and where structures would impede natural migratory processes.

In short, Categories 3, 4, and 5 will apply only to beachfront segments where reasonable post-storm beach management by any standard cannot accommodate pre-storm uses or densities. To employ these restrictive categories as part of an overall redevelopment strategy will require the full cooperation of local governments to designate supportive future land uses and densities and must include an array of pre-storm incentives to ensure voluntary participation of affected property owners. (See *Appendix E* for description of a generic process for voluntary pre-storm implementation of Categories 3, 4, and 5.)

5.1.3. Minimum Criteria for Identifying Post-storm Beach Management Options

In order to ensure that the overall objectives of the Post-storm Redevelopment Policy for Beachfront Areas (i.e., Beach and Dune Protection, Hazard Mitigation, Economic Development, and Intergovernmental Coordination) guide the identification of post-storm beach management options, minimum criteria for each category of options were developed. (See *Table 4*, below.) For the most part these criteria apply to each of the five categories, except for certain criteria which apply only to options requiring the repair of rigid coastal structures, beach restoration/enhancement projects, or a reduction in site coverage. The extent to

which these minimum criteria can be met pursuant to the existing coastal permitting program or under alternative beach management options will determine which category applies to the particular beachfront segment.

These Minimum Criteria do not preempt the current permitting criteria and standards for construction and excavation seaward of the established CCCLs. Rather, these criteria are intended to complement current permitting criteria and to ensure that the cumulative impacts of permits for rebuilding structures do not undermine more comprehensive beach management objectives.

TABLE 4. MINIMUM CRITERIA FOR POST-STORM BEACH MANAGEMENT OPTIONS

MINIMUM CRITERIA	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4	CATEGORY 5
BEACH AND DUNE PROTECTION					
1. Structures can be rebuilt sufficiently landward of primary dune.	x	x	x	x	
2. Sufficient buffer can be provided between rebuilt structures and primary dune.	x	x	x	x	
3. Site coverage of beachfront area allows for sufficient dune migration.	x	x	x	x	
4. Site coverage of beachfront area can be reduced & footprint of structure(s) modified.			x	x	
5. Beach & dune system can be stabilized with salt-resistant vegetation.	x	x	x	x	
6. Beachfront lots have sufficient depth to accommodate functions of beach-dune system.	x	x	x	x	
7. Redevelopment does not require new construction of rigid coastal structures.	x	x	x	x	
8. Repair of existing rigid coastal structures does not justify increased shore-parallel coverage	x				
or seaward relocation of major structures.					
9. Rigid coastal structures can be repaired to provide sufficient upland protection and	x				
to cause no damage to beach and dune system.					
10. Beach restoration or other enhancement program is authorized.		x		x	
11. All construction & siting standards are consistent with Ch. 161, F.S., and its implementing regulations.	x	x	x	x	
HAZARD MITIGATION					
1. Major structures can be rebuilt to minimize impacts of storms to life and property.	x	x	x	x	
2. Major structures seaward of 30-yr erosion projection can be relocated landward.	x	x	x	x	
ECONOMIC DEVELOPMENT					
1. Redevelopment does not require major expenditures to replace infrastructure and is economically justified.	x	x	x	x	
2. Beach restoration program satisfies economic criteria.		x		x	
3. Funding source for beach restoration and maintenance program is available.		x		x	
4. Funding source is available for acquisition or compensation to property owner.					x
INTERGOVERNMENTAL COORDINATION					
1. Redevelopment is consistent with local comprehensive plans & policies for post-disaster redevelopment.	x	x	x	x	
2. Redevelopment is consistent with authorized inlet management plan.	x	x	x	x	
3. Public access to the site can be accommodated, if public funding is used for beach restoration.		x		x	
4. Beach restoration project is scheduled and no permit obstacles are anticipated.		x		x	

Category 1 = Rebuild structures pursuant to Chapter161, F.S., and its implementing regulations.
Category 2 = Rebuild structures pending authorized beach restoration or other authorized enhancement program.
Category 3 = Reduce site coverage of beachfront area.
Category 4 = Reduce site coverage of beachfront area pending authorized beach restoration program.
Category 5 = Relocate structures landward of the active beach and frontal dune.

5.1.4. Pre-storm Identification of Beach Management Options and Implementation Guidelines

The following steps will be followed during the second phase of this project in order to identify post-storm beach management options in three "test" coastal counties and refine the criteria and guidelines for identifying options. The outcome of this testing phase will be the development of more specific criteria and implementation guidelines for the Post-storm Redevelopment Policy for Beachfront Areas.

Step 1. Determine Boundaries of Beachfront Segments

The determination of boundaries of beachfront segments will be based in part on the location of established CCCLs and the Division of Beaches and Shores reference monuments, with the CCCL marking the landward extent of the beachfront segment and the reference monuments marking either end of the segment in the shore-parallel direction. Division of Beaches and Shores depicts these boundaries on the CCCL maps developed for each county with an established CCCL. In addition, physical features of the shoreline and the separations between land uses will guide the determination of boundaries.

Step 2. Inventory and Assess Beachfront Conditions within the Beachfront Segment.

Using field data and the sources of information listed in Table 5, below, the following conditions will be evaluated in order to determine if the Minimum Criteria for post-storm redevelopment can be met under the existing coastal permitting requirements or can be met under an alternative beach management option. Additional sources of information needed to determine post-storm beach management options will be identified during Phase II.

Beach and Dune System Conditions:

o Can structures be rebuilt sufficiently landward of primary dune?

o Can a sufficient buffer be provided between rebuilt structures and the frontal dune?

o Will site coverage of the beachfront area allow for sufficient dune migration?

o Will lots have sufficient depth to accommodate functions of the beach and dune system?

o Can beach and dune system be stabilized with salt-resistent vegetation?

o Are rigid coastal structures adequate to provide sufficient upland protection and to cause no damage to beach and dune system?

o Is a beach restoration project required? If so, is it authorized?

Hazardous Conditions:

o Are major structures threatened (i.e., susceptible to damage from 5, 10, or 25-year storm event)?

o Are major structures located seaward of the 30-year erosion projection?

Economic Conditions:

o Will redevelopment require major expenditures to repair or replace infrastructure?

o Is beach restoration required? If so, is a source of funds available for a restoration/enhancement project?

o Will the state need to acquire property(ies)? If so, is a source of funds available for acquisition?

Policy and Regulatory Conditions (to meet Minimum Criteria for Intergovernmental Coordination):

o Will redevelopment conflict with local plans and policies for post-disaster redevelopment?

o Will redevelopment conflict with objectives of an authorized inlet management plan?

o Is beach restoration required? If so, is a restoration project scheduled?

o Will public funds be used for beach restoration? If so, can public access be accommodated?

TABLE 5.

Inventory of Beachfront Conditions

Boundaries of Beachfront Segment: _____

I. Inventory and Assessment of Beach and Dune Conditions and Redevelopment Impacts

	POST-STORM BEACH MANAGEMENT OPTIONS				
BEACH & DUNE CONDITIONS	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4	CATEGORY 5
Are structures sufficiently landward of frontal dune?					N/A
Is there a sufficient buffer between structures & frontal dune?					N/A
Is site coverage sufficient for dune migration?					N/A
Are/should dunes be stabilized with salt-resistant vegetation?					
Are lot depths sufficient?					
Consistency with Chapter 161, F.S., construction & siting standards?					
Is a beach restoration project (or other enhancement project) authorized?	N/A		N/A		N/A
Rigid Coastal Structures - existing and potential armoring length - negative impacts to beach/dune system? - sufficient protection to upland structures?		N/A	N/A	N/A	N/A

Sources: Video Survey of Shoreline Conditions
DBS aerial photos
Coastal Armoring in Florida inventory
Comprehensive Beach Restoration Plan

TABLE 5.

Inventory of Beachfront Conditions (cont'd)

II. Inventory and Assessment of Hazardous Conditions and Redevelopment Impacts

	POST-STORM BEACH MANAGEMENT OPTIONS				
HAZARDOUS CONDITIONS	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4	CATEGORY 5
Are major structures threatened by erosion?					
Are major structures seaward of a 30-yr erosion projection?					

Sources: *Beach Conditions in Florida*
Coastal Armoring in Florida inventory
CCCL Permit Data Base
Coast of Florida Erosion and Storm Effects Study

TABLE 5.

Inventory of Beachfront Conditions (cont'd)

III. Inventory and Assessment of Economic Conditions and Redevelopment Impacts

	POST-STORM BEACH MANAGEMENT OPTIONS				
ECONOMIC CONDITIONS	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4	CATEGORY 5
Will redevelopment require major public expenditures to replace infrastructure?					
Will a beach restoration project satisfy economic criteria?	N/A		N/A		N/A
Is funding source available for beach restoration or other enhancement program?	N/A		N/A		N/A
Is funding source available for acquisition or compensation to property owner?	N/A	N/A	N/A	N/A	

Sources: assessed property values
market values of upland properties and structures
recreational value of beach/dune system
Comprehensive Beach Restoration Plan

TABLE 5.

Inventory of Beachfront Conditions (cont'd)

IV. Inventory and Assessment of Existing Policy and Regulation and Impacts of Redevelopment

	POST-STORM BEACH MANAGEMENT OPTIONS				
POLICY AND REGULATIONS	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4	CATEGORY 5
Consistency with local policies for redevelopment, *repair/replacement of* infrastructure?					
Consistency with inlet management?					
Consistency with state and local acquisition plans?					
Is beach restoration scheduled?	N/A		N/A		N/A
If public funds are used for restoration, can public access be accommodated?	N/A		N/A		N/A

Sources: Relevant local government comprehensive plan(s)
Authorized inlet management plan
Undeveloped Coastal Beach Resource Inventory
local land acquisition plans

Step 3. Determine Category of Post-storm Beach Management Options

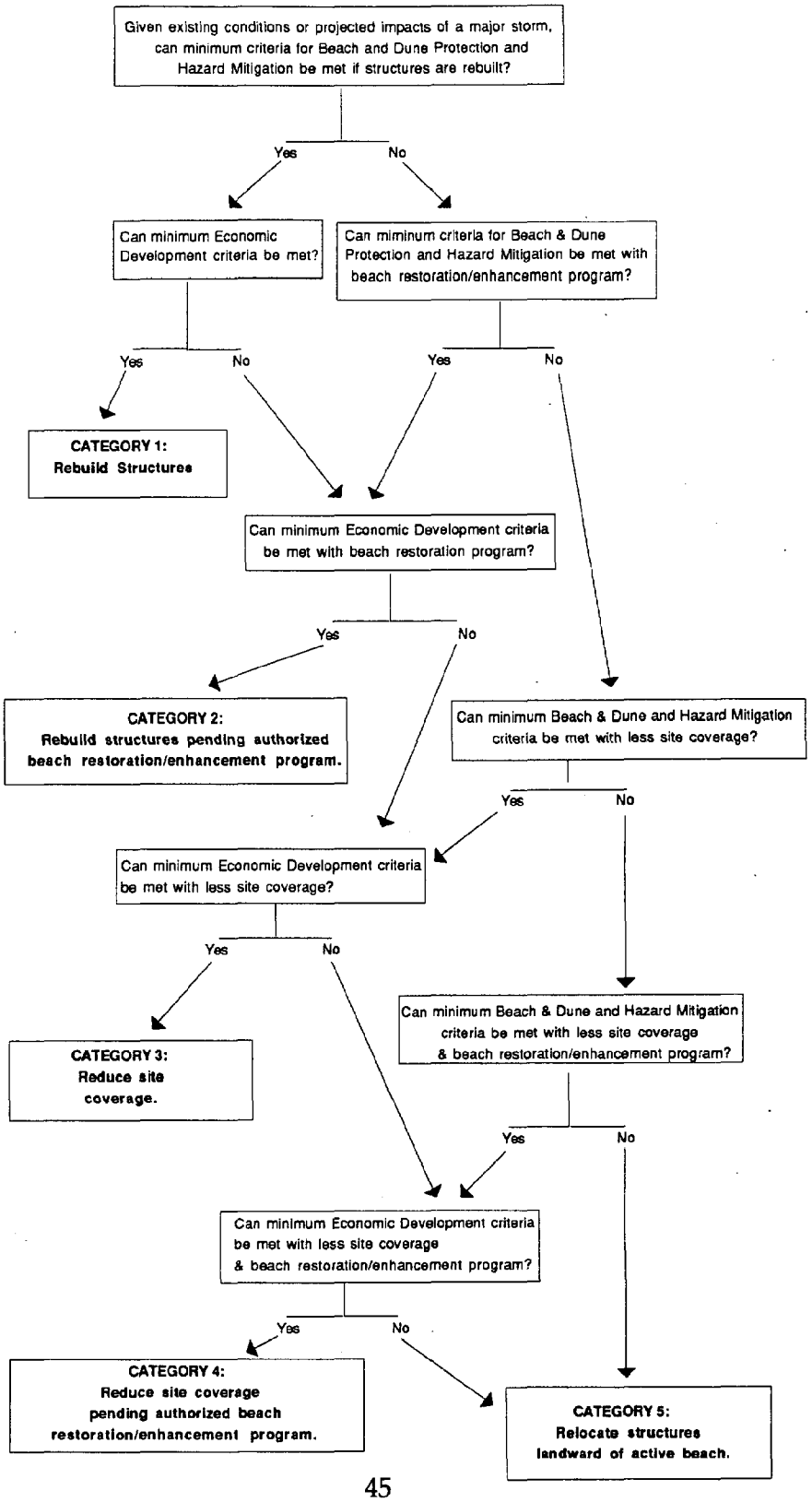
This step is constructed as a flow chart and begins with consideration of Category 1 ("Rebuild Structures"). If the Minimum Criteria for Beach and Dune Protection and Hazard Mitigation can be met under this category of beach management options, then the Economic Development criteria are assessed. If the Minimum Criteria for Beach and Dune Protection and Hazard Mitigation cannot be met, then the other categories of beach management options are considered, beginning with the less compromising options (i.e., beach restoration, dune enhancement) and moving to the more radically different options (i.e., reduction of site coverage, combination of reduction of site coverage and beach restoration, landward relocation of structures) until the Beach and Dune Protection and Hazard Mitigation criteria can be met.

Once these criteria are satisfied, then the Economic Development criteria must be considered to determine if the post-storm option is also economically feasible. A description of the methodology to determine which post-storm beach management options meet the Minimum Criteria for Economic Development (i.e., which options are economically feasible) is included in Section 6.

A flow chart depicting the determination of appropriate post-storm beach management options follows this page. The flow chart is designed to maximize beach management options that allow the rebuilding of structures in compliance with Chapter 161, Florida Statutes, and its implementing regulations.

FIGURE 1.

DETERMINATION OF POST-STORM BEACH MANAGEMENT OPTIONS



Step 4. Identification of strategies for implementation of beach management options.

As emphasized in previous sections, the effective implementation of some post-storm beach management options will depend on appropriate pre-storm planning actions. An important but complicated step in the Pre-storm Identification process is to design strategies for implementing post-storm options identified in the Beach Management Plan. In many cases, the local government will need to serve as the lead agency in implementing post-storm redevelopment options due to their jurisdiction of land use and zoning regulations. The state also plays an important role in facilitating implementation through provision of technical assistance and funding

Some generic implementation strategies for each category of options are listed in the table below. The *Beachfront Redevelopment* report already describes many of these strategies. However, determining an appropriate strategy for implementation will be contingent on characteristics of the affected beachfront segment and the surrounding community. In some cases, a combination of two or more of these strategies may be necessary. During Phase II of this project, more detailed implementation strategies will be presented based on characteristics found in the beachfront areas under study.

Appendix E describes one approach for implementing the more extreme options within Categories 3, 4, and 5. This approach implies a shared responsibility between the state and local governments in carrying out the various steps of the approach.

TABLE 6.

General Implementation Strategies for
Post-storm Beach Management Options

CATEGORY 1	Chapter 161, F.S., and implementing regulations
CATEGORY 2	1. Chapter 161, F.S., and implementing regulations 2. Comprehensive Beach Restoration Plan
CATEGORY 3	1. Replatting program (See *Appendix E*) 2. Cluster development 3. Downzoning coupled with property tax incentives
CATEGORY 4	Same options as Category 3, plus Comprehensive Beach Restoration Plan
CATEGORY 5	1. Property tax incentives and reductions for voluntary relocation 2. Identification of beachfront parcels in county-based priority lists for acquisition[11] 3. Acquisition by the state[12] 4. Acquisition by a local land trust 5. FEMA hazard mitigation grants for acquisition 6. Florida's Communities Trust funds 7. Replatting program (See *Appendix E*)

[11] The 1993 legislature amended the Local Government Comprehensive Planning Act to require that each coastal county establish a "county-based process for identifying and prioritizing coastal properties" to be acquired through the state's land acquisition programs (s.163.3178(8), Florida Statutes). This process must establish criteria which recognize hazard mitigation and beach management, among other things. This process, coupled with state land acquisition programs, has potential to assist in the implementation of post-storm beach management options if it includes properties identified in the state Beach Management Plan as "Category 5" areas.

[12] Several state land acquisition programs exist to acquire properties for public purposes, namely preservation and outdoor recreation. The 1993 legislature amended the Florida Coastal Management Act to provide additional criteria for acquisition of coastal lands. These criteria include the value of acquiring hazardous parcels, consistent with hazard mitigation and post-disaster redevelopment, and the value of providing public access and recreation in highly developed areas, and the value of acquiring properties to remove them from the pool of developable acreage (s.380.22(5)(a), (b), (c), Florida Statutes).

5.1.5. Resources for Inventory of Beachfront Conditions

As part of its comprehensive beach management and planning process, the Division of Beaches and Shores has assembled a number of resources for assessing the physical and environmental conditions of all the sandy shoreline areas in the state. The Pre-storm Identification process is designed to use these resources in order to determine the appropriate conditions for post-storm beach management based on physical, environmental, and economic conditions. However, additional sources of information needed to determine post-storm options and develop pre-storm implementation strategies will be identified during Phase II.

These resources include:

(1) *Video Survey of Shoreline Conditions* (updated, November 1993)

These videos are shot at low altitudes and are used currently to monitor shoreline development and erosion conditions for permitting and beach restoration planning. The Division of Beaches and Shores anticipates that these films will continue to be updated on an annual basis.

(2) *Beach Conditions in Florida: A Statewide Inventory and Identification of the Beach Erosion Problem Areas in Florida* (4th Edition, September 1992)

This document provides a county by county inventory of erosion problem areas, the length of the affected beach segment, and the numbers of the DNR reference monuments marking either end of the affected beach segment.

(3) *Coastal Armoring in Florida* (December 1990)

This report documents coastal armoring and storm vulnerability. It includes a county by county inventory of existing and potential (i.e., new or upgraded) armoring lengths and threatened structures, including public structures, such as roads.

(4) *Undeveloped Coastal Beach Resource Inventory* (1991)

This inventory identifies privately-owned undeveloped coastal properties with shoreline lengths of 500 feet or more and describes property characteristics such as acreage, shoreline length, assessed value, zoning,

adjacent land uses, and legal description. The results will be digitized and mapped on CCCL photomaps.

(5) Inlet Management Plans (in progress)

These plans will include corrective measures to mitigate the erosive impacts of improved coastal beach inlets. Twenty-three inlet management plans are currently being prepared and pending state authorization, and 35 are proposed for development from 1994 to 1997.

(6) Coast of Florida Erosion and Storm Effects Study (in progress)

The purpose of this study is to identify regional coastal processes and problems. According to Division of Beaches and Shores, this study "will amass the largest volume of coastal processes data yet assimilated in the United States for use by coastal engineers and planners" to evaluate options that address erosion, storm damage, and coastal flooding problems.[13]

5.2. Post-storm Reassessment of Beach Management Options

5.2.1. Purpose

In spite of even the most sophisticated and detailed pre-storm planning, the actual impacts of a major hurricane or coastal storm to beachfront areas can never be predicted with accuracy. The state should be prepared immediately after a major storm to reassess beachfront conditions and determine if the planned beach management option is still appropriate due to the magnitude or degree of damage to the beachfront area. Below are procedures that the Division of Beaches and Shores should undertake after the storm in order to implement the Post-storm Redevelopment Policy for Beachfront Areas.

---

[13] *Status of Comprehensive Beach Management Planning*, September 1993, p. 76.

5.2.2. Implementation of Post-storm Reassessment Process

A two-step process is proposed.

Step 1: Conduct areawide damage assessment.

The Division of Beaches and Shores must conduct an areawide damage assessment to determine the extent of storm damage to the beach and dune system and to structures. This macro-level assessment will allow the Division to determine if the planned Post-storm Beach Management Option can be implemented based on actual post-storm conditions. For example, if a beachfront area was identified as a "Category 1" area (i.e., Rebuild structures) in the comprehensive Beach Management Plan and sustained major storm damage to the beach and dune system, the Division of Beaches and Shores may elect to declare a shoreline emergency and delay issuance of permits to rebuild structures until the system is repaired and the shoreline protected. On the other hand, damage to the beach and dune system may be less extensive than projected and the shoreline length of a "Category 2" area (i.e., Rebuild structures pending authorized beach restoration) may be decreased. A number of post-storm scenarios are possible and could require reconsideration of areawide permit conditions for rebuilding structures.

Another purpose for the areawide reassessment is to separate heavily damaged areas from areas exhibiting only minor damage so that permitting for minor repairs can proceed while a more in-depth re-evaluation can take place in the severely damaged areas.

Ideally, the Post-storm Reassessment should be conducted as soon as possible after passage of the storm and must be consistent temporally and procedurally with other local, state, and federal response and recovery operations. As recommended in *Beachfront Redevelopment*, the post-storm reassessment should occur in cooperation with the Damage Assessment Team coordinated by county officials. Aerial photography and videography can provide the most expedient means of surveying areawide damage, particularly if storm damage and debris restrict roadway access to the affected beachfront area. The Division of Beaches and Shores used aerial photography and videography when assessing beachfront damage after Hurricane Andrew and found it effective for getting a macro view of entire segments of beachfront and determining which areas required closer inspection.

The Post-storm Reassessment process resembles the Inventory of Beachfront Conditions process and considers generally the same conditions--Beach and Dune Conditions, Hazardous Conditions, and Economic Conditions. Policy/Regulatory Conditions do not need to be reassessed since they are not directly affected by a major storm. If officials determine after the areawide damage assessment that the minimum criteria for the planned beach management option cannot be met due to actual post-storm conditions, then the Division should request that the area be declared a "severe hazard area" or "major storm damage area" and that permits to rebuild structures seaward of the CCCL be temporarily withheld in order to allow for a closer reassessment of beach management options. This should not however affect the issuance of temporary permits to secure structures.

The Division of Beaches and Shores will need to set a threshold based on the degree of damage which triggers the temporary withholding of CCCL permits. This threshold could be based on degree of structural damage (e.g., over 50 percent of the major structures, including armoring and erosion control structures, are heavily damaged or infrastructure serving the beachfront area is heavily damaged) or based on degree of damage to beach and dune system.

Step 2: Conduct parcel-by-parcel damage assessment of structures.

Once the areawide damage assessment is completed and the planned beach management option is either reconfirmed or revised, a closer parcel-by-parcel assessment of damage to individual structures must be conducted to determine which structures seaward of the CCCL will require a permit for rebuilding.

Currently, any reconstruction or repair to the foundation of a structure or outside of the footprint of the original structure requires a permit pursuant to Chapter 161, Florida Statutes. However, these statutory provisions should be amended to include that "substantially improved" structures must also receive permits to be rebuilt, regardless of damage to the foundation. This amendment should apply to all structures seaward of established CCCLs.

The Federal Emergency Management Agency's guidelines for damage assessment recommend that "substantially damaged" be defined as value of

the damage to the structure that exceeds 50 percent of its market value.[14] Applying this guideline also could broaden the opportunity for rectifying any imprudent siting and construction decisions made prior to the legislation of the 1970s and 1980s. In any case, the post-storm damage assessment and determination of which structures will require CCCL permits to rebuild should be applied consistently throughout the areas seaward of the CCCL.

In Phase II of this project, local damage assessment guidelines and procedures will be evaluated in order to determine the impact of these proposals for post-storm parcel-by-parcel damage assessment. More detailed damage assessment guidelines for areas seaward of established CCCLs will then be prepared.

[14] Details and examples of methods for determining substantial damage and implications for reconstruction in hazardous coastal areas are discussed in *Appendix D.*

Section 6. COMPARING COSTS AND BENEFITS OF ALTERNATIVE BEACH MANAGEMENT OPTIONS

Actions by property owners to redevelop their properties in the wake of storm damage can impose costs on the general public and can result in benefits, not only to the property owners themselves, but the community at large. It is for this reason that the Economic Development Policies under Objective C. of the proposed Post-storm Redevelopment Policy for Beachfront Areas (Section 4, above) require a consideration of the economic costs and benefits of redeveloping storm damaged beachfront segments and the economic feasibility of restoring the beach and dune system.

The policies require that costs for the repair and restoration of public infrastructure be included in the cost benefit analysis. This includes an economic evaluation of a beach restoration, where indicated.

Public benefits to be considered include the economic and fiscal impact of the upland properties on the local community, benefits from alternative uses such as public recreation, and reduced public costs if a reduction in shore parallel coverage is indicated by the identified post-storm beach management option.

The costs and benefits of alternative beach management options will be evaluated when:

- o minimum criteria for beach and dune protection and hazard mitigation cannot be met if redevelopment restores the status quo;

- o costs to repair or replace infrastructure exceed the benefits; or

- o long term benefits of other uses of the target beachfront area, such as recreational uses, exceed the benefits of redevelopment.

The minimum criteria for beach and dune protection and for hazard mitigation are outlined in TABLE 4, above, and include the availability of a sufficient buffer between rebuilt structures and the frontal dune, the requirement that redevelopment does not require the new construction of rigid coastal structures, that major structures can be rebuilt so as to minimize the impact of storms to life and property, and that any necessary beach restoration can be authorized and funded.

The following redevelopment options will be considered:

o Rebuild Structure Pending Beach Restoration or Enhancement;
o Reduce Site Coverage of Beachfront Area;
o Reduce Site Coverage of Beachfront Area Pending Beach Restoration or Enhancement; and
o Relocate Structures Landward of the Active Beach and Frontal Dune

The methodology for evaluating the alternative redevelopment options is being developed in two phases. The initial methodology outlined below will be applied to segments of the state's beachfront areas in Phase II of this project with the objective of developing a methodology for classifying segments prior to a storm into Categories 1, 2, 3, 4 or 5. During Phase II of the project, the initial methodology will be refined on the basis of experience.

After storm damage occurs, there will be a reassessment of the categorization of the affected beachfront segments. At such a time, the scope of the cost benefit analysis will be reduced to the affected area and a more in-depth analysis will be carried out.

It is envisaged that the determination of post-storm beach management options will follow the flow chart approach (depicted in Figure 1) and beachfront segments will funnel their way down through Categories 1 to 5. Segments that meet the criteria for Category 1 will be so classified and further economic analysis will be unnecessary. Segments that can be redeveloped to the pre-storm level, provided a beach restoration is feasible will be classified into Category 2. Segments that fail to be placed in Categories 1 or 2 will then be analyzed to determine whether they belong in Categories 3 or 4, and properties that fail to meet those criteria will be placed in Category 5.

The principal economic criterion governing the eligibility for Category 1 designation is that redevelopment does not require major expenditures to replace economic infrastructure, and that such replacement be economically justified.

On a pre-storm basis, the methodology will require an inventory of the public infrastructure along the beachfront segment and estimates of its replacement cost. Criteria will be developed during Phase II of this project on the basis of experience to determine when cost thresholds are reached that trigger a need to evaluate the economic justification of infrastructure replacement. The criteria will include

amount of cost, potential eligibility for FEMA funding, and ability of the local community to cover likely debt service costs.

The methodology for the economic justification of infrastructure is applied routinely at the federal, state and local levels, and this standard methodology will be followed.

Classification of properties into Categories 2 and 4 requires an evaluation of the economic feasibility of a beach restoration. In the section below, an outline of the methodology to evaluate the economic feasibility of a beach restoration is presented for the Pre-storm Identification of Beach Management Options process.

A post-storm analysis would require a detailed engineering analysis and more detailed information on recreational and other community benefits.

6.1. Costs and Benefits from a Beach Restoration

The costs and benefits of restoration of the beachfront status quo coupled with a beach restoration project (Category 2) primarily involve the conventional analysis of a beach restoration. This option is only available if the beach restoration is part of the State Comprehensive Beach Restoration Plan or the project can receive other appropriate state approvals. A local source of funds must also be readily identifiable to fund the non-federal, non-state funded share.

The costs of this beach management option involve the initial construction and future maintenance of the beach restoration, together with the initial construction and maintenance of any other public infrastructure.

For projects in the State Comprehensive Beach Restoration Plan construction costs are available. For projects without available cost data, approximate costs per cubic yard of fill can be obtained based on distance from the likely borrow area, and the usual engineering and administration and contingency costs can be estimated as a percent of fill placement costs. Maintenance costs are usually about 50 percent of the initial project costs in constant dollars, and they must be discounted to present values using an interest rate. The interest rate used by the Army Corps of Engineers can be employed for this purpose.

The benefits of a beach restoration include recreational benefits received by residents, day visitors and tourists who use the beach. Estimates of increased beach usage and/or recreational values can be derived from the experience of similar beach restorations. Some limited surveys of beach users may be necessary in some

cases. Future recreation benefits must also be discounted to present values using an interest rate.

Storm damage prevention benefits are a second part of the benefits of a beach restoration. These benefits are calculated based on an analysis of the recessions induced by storms of different probabilities. The expected losses from storm damage with the project are compared to the expected losses without the project. Future losses are discounted to present values using an interest rate.

Storm damage prevention benefits are also realized by public properties such as roads and utility lines. The storm damage prevention benefits to these properties are evaluated by comparing the benefits of the beach protection to equivalent alternative protection using erosion control structures or relocation.

Other community benefits from a beach restoration include income and employment generated by commercial properties whose clientele use the beach, and the contribution of the structures to the tax base. Income and employment data by industry are used to estimate income and employment benefits. These may be obtained by survey, or from secondary government sources.

Fiscal benefits from a beach restoration can be developed from the impact of such a restoration on property tax values, using methodologies that have been applied to Captiva Island in southwestern Florida and other restored beaches in the state. Basically, the storm damage prevention and local recreational benefits will directly increase property values as markets internalize them. The resulting increase in values generates increased taxes. Other tax revenues may also rise if increased tourism is induced by the expanded beach.

Finally, other reconstructed infrastructure also yields benefits. For example, a reconstructed road link may provide reductions in traffic delays, or accommodate hurricane evacuation. Conventional techniques for analyzing the benefits from such infrastructure can be employed.

6.2. Costs and Benefits of Reduced Site Coverage

In the event that a beach restoration is not permittable or economically feasible, the option of reduced shore parallel coverage must be evaluated. In many respects, such reduced coverage can be viewed as an alternative means of restoring a beach and much of the same methodology applies for analyzing economic feasibility.

The reduced shore parallel coverage option may, in fact, encompass a number of sub-options. Reduction of shore parallel coverage might be accomplished by the transfer of redevelopment rights. This will permit increased densities in lots where such density does not negatively impact the beach and dune system while eliminating densities in other lots.

There may be several alternatives to be considered, involving different costs, but equivalent benefits. It might be necessary for the state or local government to purchase the parcels that will be involved in the transfer of the rights on a temporary basis and different configurations will involve different costs.

There might also be differences in benefits from alternative methods of reducing shore parallel coverage. Storm damage prevention benefits will arise when structures are reconstructed in a parcel less vulnerable to storms.

There will also be storm damage prevention benefits to properties protected by the protected beach and dune system. Protection of the beach and dune system will also protect the recreational benefits of its users. Finally, there may be benefits from the use of the land vacated by structures.

These benefits from reduced parallel coverage will be evaluated using the same techniques discussed under beach restoration in the previous section. Protecting a beach and dune system is simply a different method of placing sand on a beach - keep the sand there, rather than replacing it.

6.3. Costs and Benefits of Reduced Site Coverage Coupled with a Beach Restoration

A third option involves reduced shore parallel coverage coupled with a beach restoration project. This option will be evaluated when reduced shore parallel coverage alone will not eliminate adverse impacts to the beach and dune system. The costs and benefits under this option will essentially involve adding the other costs and benefits of the preceding two options, adjusted for the precise configuration of the option selected.

6.4. Costs and Benefits of Relocation Landward

If reduced shore parallel coverage, even in tandem with a beach restoration project, cannot protect the beach and dune system, the costs of relocation landward should be compared to the benefits of the beach and dune system. The benefits will be of the same type as the reduced coverage benefits discussed above. The costs will include the purchase price of properties landward of the shoreline.

6.5. Post-Storm Analysis of Beach Management Options

A post-storm analysis will be more comprehensive than a pre-storm analysis. A detailed engineering analysis will be required to provide a basis for the economic analysis. Although more comprehensive, the post-storm analysis will be more limited in geographical coverage and the number of alternatives to be considered may be less.

The Property Appraiser's file will be a major source of economic information for the post-storm analysis. This will be supplemented by local data on economic and fiscal impact, including employment, payrolls, tax revenues generated by the coastal segment under the different alternatives, as well as some surveys of businesses and households.

Section 7. OBJECTIVES OF PHASE II: Testing and Revision of Proposed Minimum Criteria for Post-storm Redevelopment and Beach Management Options

A second phase of this project will begin in February, 1994, in order to apply the proposed minimum criteria and to assess the impacts that the implementation of the Post-storm Redevelopment Policy may have on selected beachfront areas. Phase II includes several objectives:

(1) To select three coastal counties in the state in order to apply the minimum criteria and identify appropriate post-storm beach management options for segments of beachfront. The selection will be based on counties with shorelines which exhibit a variety of coastal development, physiographical, environmental, and economic characteristics to make sure that the proposed criteria and options are not biased toward particular beachfront conditions.

(2) To assess existing conditions in the beachfront areas of these counties and implement the steps outlined and proposed in the Pre-storm Identification of Categories of Beach Management Options process. The purpose is to identify any problems in implementing this process and revise the process accordingly.

(3) To identify appropriate strategies for implementing the proposed Post-storm Redevelopment Policy for Beachfront Areas based on the following:

(a) existing beach and dune conditions and on-going or planned beach restoration/enhancement programs;

(b) review of relevant comprehensive plans and policies, including future land use maps;

(c) existing local capacity to implement strategies for more extreme categories of beach management options, if applicable; and

(d) available funding sources for implementing particular options.

(4) To review county disaster response and recovery plans, including damage assessment procedures, in order to discern any inconsistencies among local processes and to identify any related problems in implementing a uniform damage assessment guidelines for areas seaward of the CCCL.

APPENDICES

APPENDIX A.

Counties with Coastal Construction Control Lines

Bay	Manatee
Brevard	Martin
Broward	Nassau
Charlotte	Okaloosa
Collier	Palm Beach
Dade	Pinellas
Duval	Santa Rosa
Escambia	St. Johns
Flagler	St. Lucie
Franklin	Sarasota
Gulf	Volusia
Indian River	Walton
Lee	

APPENDIX B.

Bibliography of Post-Disaster and Hazard Mitigation Literature

Brower, David J., Timothy Beatley, and David J.L. Blatt. *Reducing Hurricane and Coastal Hazards through Growth Management: A Guidebook for North Carolina Coastal Localities*. Chapel Hill, NC: University of North Carolina at Chapel Hill, Center for Urban and Regional Studies. FEMA Contract EMA-K-0078. July 1987.

Burby, Raymond J., et al., *State Planning Mandates: How Well Are They Working?* (Working Paper No. 18). New Orleans: University of New Orleans, College of Urban and Public Affairs, September 1993.

Bush, David M., Orrin H. Pilkey, Jr., et al. *Principles of Property Damage Mitigation from Coastal Storms and Hurricanes, Southeast United States Atlantic Barrier Coastline* (draft final report). Chapel Hill, NC: Duke University Department of Geology, Program for Study of Developed Shoreline, March 1991.

Clark, John R. "Natural Science and Coastal Planning: The California Experience," in *Protecting the Golden Shore: Lessons from the California Coastal Commission*, ed. Robert J. Healy. Washington, D.C.: The Conservation Foundation, pp. 177-207.

Coastal Resources Interagency Management Committee, Office of Coastal Management. *Hurricane Post-disaster Case Studies for Franklin County, Cedar Key, and Indian Rocks Beach: Report to the Governor*, Tallahassee, FL: Office of Coastal Management, March 24, 1986.

"DCA Secretary Addresses State's Emergency Management Needs," *Florida Planning*, July 1991, Vol. II, No. 11, pp. 1, 6, 14-15.

Florida Department of Community Affairs, Division of Emergency Management. *Post-disaster Hazard Mitigation Plan for the State of Florida*. FEMA-743-DR-FL and FEMA 756-DR-FL. June 1986.

Florida Department of Environmental Protection, Division of Beaches and Shores, Office of Beach Management. *Status of Comprehensive Beach Management Planning*. Tallahassee, FL, September 1993.

Florida Department of Natural Resources, Office of Policy and Planning. *Beachfront Redevelopment*. Tallahassee, FL: Office of Coastal Management. Grant #321. March 1993.

Griggs, Gary B., and Rogers E. Johnson. "Impact of 1983 Storms on the Coastline," *California Geology*, August 1983, pp. 163-174.

McElyea, William D., David J. Brower, David R. Godschalk. *Before the Storm: Managing Development to Reduce Hurricane Damages*. Chapel Hill, NC: University of North Carolina at Chapel Hill, Center for Urban and Regional Planning, Ocean and Coastal Policy Program. FEMA State Assistance Project EMW-K-0201. 1984 (3rd Printing).

South Florida Regional Planning Council. *South Florida Hurricane Contingency Planning Study*. June 1987.

South Florida Regional Planning Council. *Post Disaster Redevelopment Planning: Model Plans for Three Florida Scenarios*. Tallahassee, FL: Florida Department of Environmental Regulation, Office of Coastal Management, December 1990.

State of Florida, Environmental Land Management Study Committee (ELMS III). *Building Successful Communities: A Final Report to Governor Lawton Chiles*. Tallahassee, FL: Florida Department of Community Affairs, December 1990.

APPENDIX C.

Legal Context of Proposed Post-storm Redevelopment Policy for Beachfront Areas

C.1. Introduction

The purpose of this appendix is to identify and evaluate legal issues that are likely to arise in the establishment and implementation of the policies identified in this report. The appendix will attempt to identify areas in which implementation will require new or amended rules or statutory amendments. It also will identify areas where the proposed policies have been written to accommodate concerns over the constitutionality of potential decisions and the relative powers granted the Department of Environmental Protection, Division of Beaches and Shores, and local governments over decisions that affect the beach and dune system.

C.2. Existing Statutory Framework

Primary authority for regulating development activities in Florida lies with local governments. Local governments have authority through home rule to develop comprehensive plans and adopt zoning and other land regulatory measures. Chapter 163, Florida Statutes requires local governments to use those powers and provides a framework for ensuring that plans are adopted and that local land development activities are consistent with those plans. Under this framework, local governments decide how much and what kind of development is to be allowed, including the development of beachfront areas.

Chapter 161, Part III, Florida Statutes, the Coastal Zone Protection Act of 1985, provides additional requirements for local governments. Under the provisions of that part, local governments that are required to adopt building codes and that have lands in the coastal high hazard area must adopt additional building standards for structures in the "coastal building zone." Those controls apply to new structures and also require that structures built before the standards were adopted to be reconstructed "to code" if additions or repairs to the structure total fifty percent of its value over a five year period.

The primary source of state agency regulatory over activities along the shoreline is Chapter 161, Part I, Florida Statutes, the Beach and Shore Preservation Act. This statute gives the Department of Natural Resources (now the Department of Environmental Protection), Division of Beaches and Shores, the authority to regulate building activities in several areas. First, the chapter authorizes the Division to establish a "coastal construction control line" (CCCL) that delineates the area expected to be inundated or affected by wave action in a 100 year storm event. Seaward of this line the Division may regulate building activities to ensure that the beach and dune system is protected. A second provision puts more restrictive requirements on construction within fifty feet of the mean high water line; development within this area is generally prohibited, though the Division may grant variances in limited cases. Finally, the Act regulates construction seaward of a "30 year erosion projection." Seaward of this line, the only construction permitted is single family homes, and then only in limited circumstances and with significant restrictions on their location on the parcel.

The Act also provides a significant grandfathering clause applicable to the CCCL and 30 year erosion projection permit requirements. This provision exempts structures that existed prior to, or were under construction at the time of, the adoption of the Act or the setting of control lines. Repairs, additions, or modifications to those structures are also exempted within the confines of the existing foundation; however, the exemption is lost if the foundation is repaired, modified or added to. In that case, the construction activity will be subject to current permit requirements and the Division may require the structure to be relocated.

C.3. Department Authority to Adopt the Proposed Pre- and Post-Storm Policy Framework

Major storm events have the capacity to alter severely not only the beach and dune system but also structures located in the coastal area in or near the beach and dune system. Many or all of the structures in a given area may need to be reconstructed and/or relocated after such an event in order to provide a stable beach and dune system and for public safety. The framework proposed in this project is intended to guide permitting decisions under these conditions.

The baseline assumptions and statewide policies described in Sections 3 and 4 of the main body of this report represent existing state policies toward activities in coastal areas or logical extensions from such policies. This policy framework,

however, includes considerations outside the Department's authority under Chapter 161, F.S. For example, Policy A.8 involves the subdividing of lands, a concern left to local governments under current law. While later phases of this project will consider means to implement these policies, the focus in this phase is on guiding the Division of Beaches and Shore's planning and permitting activities. In that context, the "Minimum Criteria for Post-Storm Beach Management Options" for various categories of property were developed. These criteria are based on current provisions of Chapter 161, as is demonstrated by Table C.1, below.

TABLE C.1.

Statutory Authority for Minimum Criteria for Post-storm Beach Management Options

MINIMUM CRITERIA	Statutory Authority
	(all cites to Chapter 161, Fla. Stat.)
BEACH AND DUNE PROTECTION	
1. Structures can be rebuilt sufficiently landward of primary dune.	161.053(13)(c); 161.053(5)(a)(1)&(3)
2. Sufficient buffer can be provided between rebuilt structures and primary dune.	161.053(5)(a)(3)
3. Site coverage of beachfront areas allows for sufficient dune migration	161.053(5)(a)(1);161.053(13)
4. Site coverage of beachfront area can be reduced & footprint of structure(s) modified.	161.053(13)(a); 161.053(5)(c)
5. Beach & dune system can be stabilized with salt-resistant vegetation.	161.053(13)(a);161.053(5)(a)(3);161.053(5)(c)

TABLE C.1 (cont'd)

MINIMUM CRITERIA	Statutory Authority
	(all cites to Chapter 161, Fla. Stat.)
BEACH AND DUNE PROTECTION	
6. Beachfront lots have sufficient depth to accommodate functions of beach-dune system.	161.053(13)(a)&(c); 161.053(5)(a)(1)&(3)
7. Redevelopment does not require new construction of rigid coastal structures.	161.053(13)(a)&(c); 161.053(5)(a)(1)
8. Repair of existing rigid coastal structures does not justify increased site coverage or seaward relocation of major structures.	161.053(13)(a); 161.053(5)(a)(1)
9. Rigid coastal structures can be repaired to provide sufficient upland protection and to cause no damage to beach and dune system.	161.053(13)(a); 161.053(5)(a)(1)
10. Beach restoration or other enhancement program is authorized.	161.053(13)(c); 161.053(5)(a)(1); 161.161(j)
11. All construction & siting standards are consistent with Ch. 161, F.S., and its implementing regulations.	161.053(13)
HAZARD MITIGATION	
1. Major structures can be rebuilt to minimize impacts of storms to life and property.	161.053(13)(a)&(c); 161.053(5)(a)(3)
2. Major structures seaward of 30-yr erosion projection can be relocated landward.	161.053(6)(a)-(c);161.053(12)

TABLE C.1. (cont'd)

MINIMUM CRITERIA	Statutory Authority
	(all cites to Chapter 161, Fla. Stat.)
ECONOMIC DEVELOPMENT	
1. Redevelopment does not require major expenditures to replace infrastructure and is economically justified.	161.053(13)(a)&(c);
2. Beach restoration program satisfies economic criteria.	161.161(1)(j)&(2)
3. Funding source for beach restoration and maintenance program is available.	161.053(13)(a)&(c); 161.053(5)(a)(1)
4. Funding source is available for acquisition or compensation to property owner.	161.212
INTERGOVERNMENTAL COORDINATION	
1. Redevelopment is consistent with local comprehensive plans & policies for post-disaster redevelopment.	161.053(5)(b)
2. Redevelopment is consistent with authorized inlet management plan.	161.053(13)(a); 161.053(5)(a)(1); 161.053(5)(a)(3)
3. Public access to the site can be accommodated, if public funding is used for beach restoration.	161.053(5)(e)
4. Beach restoration project is scheduled and no permit obstacles are anticipated.	161.053(13)(c); 161.053(5)(a)(1)

The inclusion of economic and intergovernmental coordination criteria represent important aspects of likely post-storm conditions. In effect, they control the likelihood and timing of beach restoration projects that might be undertaken to address erosion or other damage to the beach and dune system. Indeed, under the provisions of Chapter 161, Part II, Florida Statutes, that govern beach management plans and the priorities of beach restoration projects, these economic and intergovernmental coordination issues must be considered. These beach management activities, in turn, are a significant component of the stability and topography of the shoreline, consideration of which is required under the CCCL permit. In addition, the final topography and condition of the beach after maintenance or repair activities must be considered in determining the impacts of the location of the reconstructed or relocated structures, again necessary considerations for the control line permit. Finally, the status of beach restoration or erosion control programs is a key consideration in determining the location of the 30 year erosion projection and therefore the determination of the permissibility of construction in an area that has been badly storm damaged.

Thus the economic and intergovernmental coordination considerations described here are necessary considerations in a post-storm situation under the permitting standards in Chapter 161, Part I. These considerations, along with the need to consider the stability and topography of beach segments that have been heavily damaged rather than examining just the conditions surrounding a particular parcel, justify the imposition of a "moratorium" on permit approvals by the Division, as proposed in Section 5.2 of the main body of this report. This temporary delay in permit issuance would last until the conditions of the entire beach segment have been evaluated and a recovery plan, which may or may not include a beach restoration program, put into place.

The same considerations support the adoption and application of these policies to pre-storm conditions. In many areas of the state, erosion conditions and the topography of the land seaward of the CCCL provide indicators that extensive damage to the beach and dune system and any structures within it will result from a significant storm event. Where these conditions can be identified before a storm, strategies for dealing with the likely results of a storm should be developed under both the statutory requirements for beach management plans and the necessity to consider shoreline stability and topography in determining the permit conditions that are appropriate under the CCCL program in a post-storm situation. These pre-storm planning determinations will allow property owners to properly adjust their

expectations and plans and provide appropriate and necessary information for local governments to consider in the preparation of the coastal management elements of their comprehensive plans.

C.4. The Grandfather Provisions and Post-Storm Jurisdiction over Structures

As noted above, the repair, modification or reconstruction of a structure within the confines of its existing foundation footprint is exempt from CCCL permit requirements unless the foundation is repaired, altered or added to, whether or not the structure was built under a previous CCCL permit. On its face, this would indicate that even heavily wind-damaged structures might be exempt from post-storm CCCL permitting by the Division. In a post-storm situation where a section of shoreline had a mix of destroyed, heavily damaged and moderately damaged structures as well as heavy erosion of the beach and dune system, any structure whose foundation was damaged or destroyed would require a new permit. The status of structures without foundation damage is less clear. While the "existing foundation" exemption would grandfather those structures from the direct application of CCCL permit requirements, other provisions of the law may require them to be permitted by the state.

The provisions of Chapter 161, Part III, the Coastal Zone Protection Act, include two definitions that alter the situation. First, "construction" that must be in compliance with the code is defined to include "substantial improvements" to an existing structure. "Substantial improvements" are defined to include repairs that exceed 50 percent of the value of the structure before it was damaged. Repairs are cumulative over a five year period, so if a structure worth $100,000 had a $20,000 roof put on two years ago, repairs that exceeded $30,000 would count as substantial improvements. Thus if a building requires repairs constituting substantial improvement, it must be brought "up to code," that is, the building must meet the requirements of the coastal building zone requirements. This approach is the traditional way to bring "non-conforming uses" up to current standards, whether those standards are in a zoning ordinance or a building code, and similar techniques have been upheld frequently in court.

The requirements of the coastal bulding zone include a requirement that the foundation of a building be designed to withstand the loading of a 100 year storm event from wave and water action. In addition, structures seaward of the CCCL must take into account erosion forces. In addition, the properties must meet the

floor elevation and construction standards of the National Flood Insurance Program. The practical effect of these provisions is that coastal properties must be elevated above the wave and surge action and properties along the shoreline generally must be constructed on pilings, rather than on "fill."

Structures that receive heavy storm damage -- enough to require "substantial improvement"-- therefore should be required by the local government to be rebuilt in compliance with the foundation standards of the Flood Insurance and Coastal Building Zone programs. For structures that were built prior to the establishment of the original control lines or the coastal building zone, this means that incurring significant storm damage should require modifications to the foundation of the structure, which in turn will bring them outside the grandfather provisions of the CCCL permit. The Division therefore should obtain permit jurisdiction over many of the storm damaged properties.

Under the permit requirements of the CCCL program, the Division can require property owners to relocate structures landward to protect the beach and dune system as well as apply site coverage, vegetative restoration and maintenance, and dune restoration and maintenance requirements. Seaward of the 30 year erosion projection, the Division must limit structures to single family dwellings. Additionally, in order to ensure that the shoreline is stable and of the proper topography to both maintain a healthy beach and dune system and protect property, the Division can require, if appropriate, that a beach restoration project be completed prior to either issuing or activating a permit to rebuild a structure.

C.4.1. Possible Problems and Solutions

Insofar as the Division chooses to use its permit authority to ensure that construction in the coastal area is consistent with public safety and the protection of the beach and dune system, post-storm conditions offer an opportunity to modify appropriately the development patterns that occurred prior to the establishment of the CCCL program. Where structures have been damaged to the point that "significant improvement" will be required, proper application of existing law will allow the Division to require those structures to be rebuilt consistent with this goal and its current rules. Where such damage has occurred along a segment of beach, the requirement that coastal permits be based on studies of the beach stability and topography and the impacts of the structures on the beach and dune system clearly justify basing permit decisions on the evaluation of the existing conditions of the entire beach segment and plans, if any, for its repair or restoration.

A major problem with the requirements for construction within the Coastal Building Zone is that they are currently enforced by local governments, not the Division. In a post-storm situation the local government may be tempted to either waive the requirements of the Coastal Zone Protection Act or to grant variances or exemptions in violation of it. An additional complication is that FEMA, which has a similar rule that "substantially damaged"structures be "brought to code" to qualify for flood insurance, also grants variances from the strict application of its requirements.

The Division has two tools that it can use under the current law to address this problem. First, local governments must transmit to the Division all permit applications that involve construction and excavation activities seaward of an established CCCL within five days of the receipt of the application; the Division then has five days to notify the applicant of the need for state permits. If the local government does not recognize the repair of structures as "substantial improvements, " the Division could request additional information to determine whether it has (or should have) jurisdiction and notify the applicant that the applicant will be at risk of violating the Beach and Shore Protection Act if the applicant proceeds with the work before the Division has the necessary information and potentially subject to the penalties provided.[15] The other tool would be a suit against the local government to enjoin it from issuing permits if the local government attempts to grant blanket permits, or exceptions from permit requirements as a violation of that provision and of the Coastal Zone Protection Act.

These tools are relatively heavy handed and reflect the potential for conflict that will arise after a major storm as the interests of FEMA, the state, the local government and local property owners collide. The key elements of this conflict will be the desire of property owners to rebuild as rapidly as possible, and the probable sympathy of local government officials with that goal, and the goals of the state and FEMA to address the problems posed by improper beachfront development. A more constructive approach would be the pre-storm establishment of a coordination mechanism through which FEMA and local government

---

[15]Under Chapter 161, Part I, Florida Statutes, a person who engages in construction in the coastal area without permits can be required to remove the structure and return the beach to its prior state, and also may be subject to administrative fines or penalties. The threat of such an action ought to be sufficient to deter most property owners from proceeding with construction activities.

representatives will establish which structures have been damaged to at least 50% of their value and therefore rebuilt to code; this determination will then guide the Division in determining whether a CCCL permit will be required and what conditions should apply. This type of coordination could be established under existing law; in effect the Division would be helping by avoiding the necessity of two five-day delays before the property owner would know the status of the property.

This process could be simplified by amending Chapter 161 to provide that substantially improved properties are not grandfathered from the requirements of the CCCL program. This would allow the Division to promulgate a single rule for determining whether properties were substantially damaged that would take into account the relevant local and FEMA damage assessment guidelines and that would apply consistently throughout areas seaward of established CCCLs. Having a single rule would make it much easier to develop a program for coordinated damage assessments and permit conditions after a storm by the Division, FEMA and the local government to be operating from a single source of criteria for rebuilding.

C.5. **Beach Restoration as a Permit Condition**

In areas where significant shoreline erosion occurs during or before a major storm, the Division may want to include the completion of a beach restoration project as a permit condition. Such a condition is justified by Chapter 161's requirement that the stability and topography of the beach be considered, as well as the impact of construction activities on the ability of the native dune vegetation to re-establish itself. However, the legal implications of such a requirement may vary widely depending on whether economic or environmental considerations justify a subsequent beach restoration project. Those considerations also may affect the property owners' perception of the fairness of the condition. For this reason, requiring beach restoration as a permit condition may be controversial.

C.5.1. Where Beach Restoration Is Feasible

Where beach restoration is economically and environmentally feasible under the criteria set forth in Chapter 161, Part II, and under the analysis performed by the U.S. Army Corps of Engineers, the issues created by including either the funding or completion of the project as a prior condition for rebuilding are largely issues of timing and convenience for the property owners. Forcing them to wait places a time and delay cost on their use of their property, but a cost that is balanced by safety

and environmental concerns that are legitimate under the Act. The primary issue for a property owner wishing to rebuild will be how quickly the beach restoration project can be started. This will depend on the status of the beach segment on the Beach Management Plan and the availability of funding from local, state and federal sources. Alternatively, the Governor could declare a beach erosion emergency, an action which would probably be justified if a storm did enough damage to justify not allowing reconstruction until the beach was renourished. If a beach erosion emergency is declared, the Department would be authorized to expend whatever funds were available to alleviate the problem. This action could speed up the reconstruction process significantly.

C.5.2. Where Beach Restoration is Not Feasible

A much more difficult situation arises if the beach and dune system become damaged or eroded sufficiently to justify the imposition of a beach restoration project as a permit condition, but where the economic or environmental analysis indicates that beach restoration is not feasible. In such a circumstance, the property owner will be faced with either funding a beach restoration with other similarly affected property owners (if environmental conditions permit), or forgoing the reconstruction of a major structure. The property owner then has the option to either appeal these requirements or sue the Division.

Appeals and suits against the Division in these circumstances could take several forms. First, the owner could challenge the permit condition under the Administrative Procedures Act, Chapter 120, on the basis that it was arbitrary or beyond the Division's authority.. The Division would have to defend the reasonableness of the condition, but the decision would be upheld if there were in fact valid issues regarding the stability and topography of the beach/dunes system and its vegetative communities. A second form of attack would be to use section 161.212, Florida Statutes, which allows property owners to contest a permit action or decision on the basis that it is an unreasonable exercise of the police power resulting in a taking without just compensation. If a circuit court finds the decision unreasonable and therefore a taking, the agency is given the option to issue or modify the permit or to pay compensation. The most reasonable construction of the statute is that the agency action must be both unreasonable and a taking for the court to order those option; if the action was unreasonable but also a taking, the court would have to use other authority to resolve the dispute. Finally, the property

owner could sue in inverse condemnation (possible in conjunction with the 161.212 suit) claiming that the permit condition was a taking.

It is difficult or impossible to predict how a takings challenge would turn out under these circumstances. Many of the issues would be similar to those in cases where all construction has been denied under the 30-foot erosion projection, but a court might take into account the legal ability of the landowner to meet the permit requirements. Several other factors might lead the court to deny that a taking had occurred. In cases where the damage to the beach and dune system was substantial, the court might find that construction without a restoration project would constitute a nuisance. It is also conceivable that the court would not find a taking based on alternative uses that could be available such as use as a beach club or beach parking area. Finally, the court might find that the permit condition was not a taking in and of itself; the property owner would have to wait until a beach restoration project was denied to sue. Even then, the court could take the position that so long as each of the decisions (to apply the condition and not to fund the restoration) was reasonable and not a taking in and of itself, the combination was not a taking even though the property owner was denied the ability to build a house on the property. Even if a taking were found, the court might well value the property at a very low level if the damage to the beach and dune system significantly constrained construction opportunities even without the CCCL permit conditions.

Notwithstanding the likelihood that conditioning a permit on an economically infeasible public beach restoration project would be found not to be a taking, several approaches can and should be taken to minimize the negative impact of such a situation on the individual property owners. These concepts are further explored in *Appendix E*. Transfers of development rights could be applied to allow the beachfront property owners to sell their development rights to property owners not so badly affected. This would allow them to recover some value from the property. Programs to purchase development rights or conservation easements would likewise compensate the property owner for the loss of development rights while leaving the title and use of the land with the property owner. A more ambitious approach would be the establishment of a land reassembly program that would combine beachfront and off-beach parcels in a manner that would allow development to be accommodated while protecting the beach and dune system. These approaches are similar in that they leave as much of the development and land in private ownership as possible. Where these programs are not viable, another alternative would be outright acquisition of the parcel.

The problem with these programs is that the authority to carry them out is almost entirely in the hands of local governments rather than the Department. This means that, unless the Department is given additional authority and funding the best that can be done is to develop model programs and assist local governments in implementing them.

The problem in implementing post-storm solutions to resolve the problem of lots that are rendered functionally unbuildable by a storm highlights a further problem with the division of responsibility between the Department and local governments under current law. Because the designation of land uses, densities and intensities, even seaward of the CCCL, is in the hands of local governments, many decisions that greatly affect the beach and dune system are out of the Department's hands. This is demonstrated acutely by the fact that nothing in current law prevents local governments from platting beachfront lots that have too little area landward of the CCCL to allow development of the densities or land uses allowed under the local plan or zoning code. This puts the Department in the position of determining land uses or intensities through its permitting process. Local governments can even plat and designate for commercial use lots that are within areas that will be affected by the 30 year erosion projection and that cannot be used for those purposes.

These problems point to a need to amend the current law to provide much greater coordination between local land use decision and the issues relevant to beach and dune protection. While the problems created by past development practices will still need to be faced, the state should be taking greater strides toward preventing future problems in beachfront areas.

C.6. Permitting vs. Planning: Beach Management Issues and Local Comprehensive Plans

The Division of Beaches and Shores, in addition to its permitting duties under the CCCL program, has the responsibility for developing a beach management program under section 161.161, Florida Statutes. The primary purpose of this plan is to establish funding priorities for beach restoration projects. The Division thus has the authority to permit development activities and to plan certain projects that may be necessary to accommodate development activities. However, under current law, the Division does not have sufficient authority to protect the beach and dune system adequately.

The reason is that local government planning and regulatory decisions determine the density, intensity and timing of growth that affects the beach and dune system. And while impacts to the beach and dune system are to be considered as part of the local comprehensive plan, those considerations have been insufficient to prevent them from making land use decisions that are inconsistent with the permit considerations of the CCCL program, or the erosion and other beach condition considerations that guide the beach management plan.

This results in a situation where inappropriate development spurs additional demand for beach restoration activities, which places the Division in the position of potentially having to deny a beach restoration activity that is necessary for the safety of particular structures. These problems point to a need to amend Chapter 163, Part II, the Growth Management Act, to explictly require that the land use designations and regulations adopted by local government that include lands containing and seaward of coastal construction control lines are appropriate given the permit requirements of the CCCL program and are consistent with the Division's beach management plans. These changes should be made in time to be implemented when local governments begin reviewing their plans in 1996.

C.7. Conclusions

The policies and minimum criteria for post-storm redevelopment options proposed in this report are justified by current law and require no amendment to Chapter 161. It is desirable to amend Rule 16B-33, F.A.C., which implements Chapter 161, to provide explicitly for the consideration of the feasibility of beach restoration and of the condition of beach segments as part of the criteria for evaluating CCCL permits. Additional rule amendments will probably be necessary to implement special post-storm permit processing procedures and for establishing the criteria for when consideration of the beach segment conditions and other minimum criteria will be applied.

The Division may wish to consider proposing amendments to current statutes in several areas. First, the grandfather provisions of Chapter 161, Part I, should be amended to include direct consideration of whether damage to a structure will require significant improvement in determining whether the reconstruction of a property will be subject to CCCL permit requirements. It would also be useful to amend Chapter 161, Part III,,to make it clear that local governments may not give variances or exemptions to the requirements of the coastal building zone in post-

storm situations. Additionally, the Division should consider whether to seek statutory authority and funding to establish purchase of development, land reassembly or similar programs to address the need to alter land ownership patterns after a storm to avoid unnecessarily harsh regulatory consequences. Finally, the Division should consider proposing amendments to Chapter 163, Part II, that would require local governments to ensure that their comprehensive plans and land development regulations treat coastal lands more appropriately.

APPENDIX D.

Defining and Determining "Substantial Damage"

D.1. Introduction

There is no one standard definition for the term "substantial damage." Substantial damage can be determined in a number of different ways. Each state or agency may have a different definition or method for determining substantial damage. Some states use a different term altogether. The following section briefly summarizes how substantial damage is defined and used by the National Flood Insurance Program, by FEMA in the case of Metro-Dade after Hurricane Andrew, and by the coastal states of North Carolina, South Carolina, Delaware, and Texas.

D.2. National Flood Insurance Program: Substantial Damage Rule

FEMA defines "substantial improvement" in 44 Code of Federal Regulations 59.1 as:

> any structure, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the (start of construction) of the improvement. This term includes structures which have incurred 'substantial damage', regardless of the value of or actual cost of repair work performed. The term does not, however, include either (1) any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions or (2) any alteration of a 'historic structure', provided that the alteration will not preclude the structure's continued designation as a 'historic structure'.

Substantial damage is further defined in 59.1 of the NFIP regulations as:

damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

In the event of a storm, if the structure is determined to be substantially damaged it must be rebuilt in accordance with NFIP regulations and any other state or local requirements for new construction. This means that residential structures must be elevated above the level of a 100-year or base flood, and meet other applicable requirements. Substantially damaged non-residential structures must be flood-proofed. Failure to comply with community floodplain management regulations designates a substantially improved structure as a Post-FIRM building and requires that it be actuarially rated based on its risk of flooding.

In the event the structure is completely destroyed with only the original foundation and slab existing, any rebuilding would be considered a substantial improvement and termed a "reconstruction." The structure must be rebuilt according to NFIP elevation requirements and all other applicable program requirements.

In coastal high hazard areas (V-Zones), substantially damaged structures not only must be elevated to or above the base flood elevation, but must also comply with additional requirements for piling and column supports to resist flotation, collapse and lateral movement due to the combined effects of wind and water loading forces associated with a 100-year mean recurrence interval storm.

It is the ultimate responsibility of the local government to determine whether a structure has been substantially damaged and to assure that market value estimates are reasonably accurate and that the cost estimate reasonably reflects the actual costs to fully repair the structure to its before damage condition. However, the local government can require the permit applicant or the building owner to supply the necessary information, such as appraisals, to make the substantial damage determination.

Depending on the magnitude of the disaster, there will likely be many permits for repair that must be processed in a relatively short time period. Taking this into consideration, FEMA will accept "cost of repair" estimates from the following sources:

1. Itemized estimates including labor and materials from a licensed contractor or other professional estimator.

2. For structures insured through the NFIP, the monetary damage estimated by the NFIP claims adjustor can be used as a screening method to determine if a structure has been substantially damaged.
3. Damage estimates and cost of repairs can be determined by the local building permit department.
4. Building code valuation tables may be used if the type of structure in question is listed in these tables.
5. Estimates of the monetary damage sustained to the structure can be determined by field surveys conducted by building inspection departments, emergency management or tax assessment agencies, or other professional state or local officials.

The market value of the structure only pertains to the actual structure in question. It does not include the land, landscaping or detached accessory structures on the property. For the purposes of determining substantial improvement the value of the land must always be subtracted. FEMA accepts estimates of market value from the following five sources:

1. Independent appraisals by a professional appraiser.
2. Detailed estimates of the structure's actual cash value, used as a substitute for market value based on the preference of the community.
3. Property appraisals used for tax assessment purposes.
4. The value of buildings taken from NFIP claims data.
5. "Qualified estimates" based on sound professional judgement made by staff of the local building department or local or state tax assessor's office.

D.3. Dade County and FEMA after Andrew

In response to the great amount of destruction caused by Hurricane Andrew in Dade County in 1992, some standard post-disaster redevelopment procedures had to be changed. In particular FEMA authorized exemptions for substantially damaged structures because of the vast amount of structures damaged. FEMA concluded that the flood hazard mitigation benefits derived from requiring Dade County and its communities to require that substantially damaged buildings be elevated to or above the base flood elevation were outweighed by the high costs to elevate in the county, the inability of most property owners to pay for such

elevation, and the lack of insurance coverage or disaster relief grants to help victims meet these elevation costs. Further, FEMA determined that the scale of damage and threats to public health and safety would contribute to the inability of communities to recover. Not permitting variances would impose a severe hardship and gross inequity upon the communities.

FEMA guideline 44 Code of Federal Regulations 60.6, Variances and Exceptions, Section 60.6(b)(1) provides the following:

> Certain exceptions from the standards contained in this subpart may be permitted where . . . , because of extraordinary circumstances, local conditions may render the application of certain standards the cause for severe hardship and gross inequity for a particular community.

For these reasons FEMA justified granting limited variances, without causing the communities to be declared not in compliance with NFIP Floodplain Management standards. FEMA allowed communities within Dade County, which participate in the National Flood Insurance Program (NFIP), to amend or interpret their existing floodplain management ordinances to authorize limited variances permitting owners of substantially damaged buildings to repair those buildings. However, the current lowest floor of the building can be no more than two feet below the 100-year or base flood elevation (BFE). Although allowed to rebuild structures not conforming to National Flood Insurance elevation requirements, owners will be subject to higher premiums due to their greater risk.

National Flood Insurance Program standards require using a 50 percent threshold for the "market value" of the structure previous to damage, in determining whether a structure has been substantially damaged. If so, local code requirements for the rebuilding process must then be applied, namely, that the lowest floor must be elevated to or above the BFE. To mitigate the burden on the numbers of structures found substantially damaged after Hurricane Andrew, Dade County asked that NFIP regulations be amended to allow municipalities to use "replacement cost" in lieu of market value for calculating the 50 percent damage threshold. FEMA uses the definition of replacement cost as found in the American Institute of Real Estate's book The Appraisal of Real Estate, 1983:

> . . . the cost of construction at current prices of a building having utility equivalent to the building being appraised but built with modern materials and according to current standards, design, and layout.

In response to this request, FEMA replied by interpreting current regulations as allowing the use of replacement value, rather than making a formal amendment. FEMA required that this interpretation only affect marginal structures that were badly damaged but repairable, and that careful documentation of the use of replacement cost be maintained. Further, FEMA required that estimates of replacement costs be determined by using Marshall & Swift's Residential Cost Handbook or similarly recognized cost handbooks. FEMA recognized that the post-disaster economy of Dade County had driven construction costs up dramatically. FEMA allowed for the use of non-inflated (pre-Andrew) material and labor costs for determining the cost of repair to buildings.

To further lessen the burden on property owners whose structures would normally be categorized as substantially damaged, FEMA allowed several itemized costs to be exempted from the substantially damaged calculation. These include: structural fill, demolition costs, carpets covering finished floors, non- built-in appliances, and other items incidental to the reconstruction of a building.

In the event of a storm or flood with widespread damage such as that left by Hurricane Andrew, the governing body or presiding political authority of the community, upon advisement of the local permit official, may chose to impose a moratorium for issuing permits immediately after the storm or flood event until information can be gathered on the locations of substantially damaged structures.

D.4. North Carolina

Under the North Carolina Administrative Code, if a structure's storm damage amounts to more than 50 percent of the pre-storm physical value, a new permit is needed to rebuild and the structure must conform to current setback and building codes.[16] Physical value is based on the appraised value determined by the local building inspection office.

---

[16]North Carolina Administrative Code, Section T15A: 07M.0500, Post Disaster Policies, 02/16/90.

In some areas rebuilding may be prohibited. Although approximately 50 variance requests have gone before the Coastal Resources Commission (CRC) since 1979, the code has been upheld. Approximately 90 percent of these cases were denied variances. There have been no legal challenges contesting the state's 50 percent damage rule.[17]

Although two hurricanes, Hugo (1989) and Emily (1993), recently have affected the North Carolina coast, most cases that have gone before the CRC are cases involving chronic erosion, not hurricane damage. Hurricane damage is usually temporary or repairable.[18]

Brunswick County was the only county in North Carolina significantly impacted by Hurricane Hugo. Approximately 300 property owners within the zone of imminent collapse considered federal insurance payments to relocate or demolish their structures under the Upton-Jones amendment. However, most did not pursue their claims after the area began reconstructing the dunes with assistance of FEMA relief funding. Most damage from Hugo was minor damage. There were no substantially damaged structures as a result of Hugo.[19]

Two recent examples of variances that were approved concerned motels in Buxton in Dare County after Hurricane Emily in August 1993. In both cases, several units were substantially damaged by rising water from the Pamlico Sound, not from the ocean. Also, in both cases the annual erosion rate was decreasing, and a new long term (30 year) erosion setback line, located further seaward than the previous line, was under consideration by the Commission. Both plans called for the improved design of the new units by setting them on pilings, locating them further landward than the original structures, and by not increasing the size or number of units. Because of these factors, it was determined that the variances would be given because they fulfilled the intent of the rule even though a few of the new structures would still be located seaward of the current and new erosion setback lines.[20]

---

[17]Ibid.

[18]Ibid.

[19]Ibid.

[20]North Carolina Coastal Resources Commission (CRC), "In the matter of: Petition for variance by John Hooper, Katherine Hooper, and Edgar Hooper, Final Order," and "In the Matter of: Petition for variance by Carol White Dillon," November 18, 1993.

D.5. South Carolina

The definition of "destroyed beyond repair" is used by South Carolina. For a habitable structure, "destroyed beyond repair" means that more than 66 2/3 percent (two-thirds) of the replacement value of the habitable structure has been destroyed.[21]

A structure that is less than two thirds damaged may be rebuilt on the same footprint on which it previously stood, but federal guidelines must still be followed. If a structure is destroyed beyond repair, it must follow the procedures of a new habitable structure for the most part.[22]

The Coastal Council determines whether a structure is destroyed beyond repair upon request of the owner of a structure or local government, of its own volition, or in response to an emergency situation.[23]

Following a natural disaster, the Coastal Council coordinates a post-storm damage appraisal with the affected local government. Council staff makes the initial damage appraisal. The Council may use the property owner's insurance adjustor's figures to determine damage when appropriate. If an owner disagrees with the Council's appraisal, he may get a second appraisal. If the two appraisals differ, then the two appraisers select a third appraiser. If they cannot agree on an appraiser, the Clerk of the County selects the third appraiser. The third appraisal is final.[24]

According to Christopher Brooks, Deputy Director of the South Carolina Coastal Council, an owner of a structure with damage exceeding two-thirds of the replacement value must apply for a new permit and must adhere to current codes and setback requirements, as mandated in section 48-39-280 of the South Carolina Code. A point system is used for damage assessment. Different parts of the structure are weighted as to their percentage of total structure and assessed

---

[21]South Carolina Coastal Council, Rules and Regulations for Permitting in the Critical Areas of the Coastal Zone, July 1993, p. 5.

[22]Telephone interview with Christopher Brooks, Deputy Director of the South Carolina Coastal Council, September 9,1993.

[23]South Carolina Coastal Council, Rules and Regulations for Permitting in the Critical Areas of the Coastal Zone, July 1993, p. 39.

[24]Ibid.

separately. The separate assessments are then added to make a final judgment of the overall structure.[25]

D.6. Texas

In Texas public ownership of the beach extends landward to the upland vegetation line. If the vegetation line migrates landward, so does the public right to access.[26] The vegetation line is defined as the extreme seaward boundary of natural vegetation which spreads continously inland. In areas with no clearly identifiable line of vegetation the "line of vegetation" for the purpose of regulation shall be determined by the nearest clearly marked line of vegetation on each side of the unmarked area.

Texas legislation mandates that no new structures, including all habitable and coastal armoring structures, can be built seaward of the vegetation line. In addition, in the event of a storm, any structures damaged beyond 50 percent of their previous value must be relocated landward of the line. This is mandated in the Texas Coastal Management Bill (S.B. 1053).[27]

After Hurricane Alicia struck in 1983, there were several legal challenges to the restrictions on construction seaward of the vegetation line. In Seinman v. State of Texas, 75 property owners unsuccessfully challenged the migration of the public beach which results in the resetting of the vegetation line. Many cases were litigated to the State's supreme court. However, the law prevailed in all cases.[28]

Another noteworthy case, Matcha v. Mattox (Attorney General of Texas) challenged the public's right to free access of the beach after Hurricane Alicia caused the beach to migrate 125 to 150 feet landward. The Matcha's home was severely damaged during the storm and the attorney general posted notice on the structure that its repair might be in violation of law. Despite the warning the Matchas continued to repair their house and added fill and plants around the structure. According to Texas law, whatever right the Matchas had to the area was subordinate

---

[25]Telephone interview with Christopher Brooks, Deputy Director of the South Carolina Coastal Council, September 9,1993.

[26]Florida Department of Natural Resources, Office of Policy and Planning, Beach Redevelopment, March 1993, p. III-9.

[27]Telephone interview with Kim McKenna, Geologist, Texas Coastal Division of the Resource Management Office, September 10, 1993.

[28]Ibid.

to the right of lawful use of and access to the area by the general public. The district court ruled in favor of the State.

The 50 percent substantial damage rule has held up well for the state. No substantially damaged structures have been allowed to rebuild seaward of the vegetation line. There have been some borderline cases in which rebuilding was allowed.[29]

There is no strict criteria for determining percent damage. Following a storm a visual assessment is conducted, if the visual assessment does not provide enough to make a determination the state requires that all damage assessments made by the county and insurance adjusters be provided to the State. Texas is currently discussing which agency will take the lead in post-disaster redevelopment.[30]

D.7. **Delaware**

Construction and reconstruction are prohibited seaward of the building line established by the State's Beach Preservation Act of 1972. Any construction seaward of the line, including the restoration or reconstruction of a structure, requires a new permit.[31] Construction landward of the line requires only notification and a letter of approval from the state.[32]

If an existing structure's foundation, which stands seaward of the line, needs any repairs that require elevating the structure, the structure must be set back behind the line.[33] If the space available entirely landward of the building line is determined to be inadequate for construction or reconstruction of a structure, the structure must be located as far landward on the parcel as possible.[34]

"Completely destroyed" is defined as having 75 percent of the original structure or 50 percent of the foundation pilings unsuitable for incorporation into

---

[29]Telephone interview with Ken Cross, Texas State Attorney's Office, Environmental Protection Office, December 10, 1993.

[30]Ibid.

[31]Florida Department of Natural Resources, Office of Policy and Planning, Beach Redevelopment, March 1993, p. III-7-8.

[32]Telephone interview with Maria Sadler, Environmental Scientist, Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation, September 27, 1993.

[33]Ibid.

[34]Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation, Regulations Governing Beach Protection and the Use of Beaches, Revised and Effective December 27, 1983.

the rebuilding of the structure.[35] Presently there is support to lower the completely destroyed threshold for foundation damage from 50 percent to 25 percent.[36]

Assessing a structure's damage is done at the discretion of state assessors. Only one completely destroyed structure has not been allowed to be rebuilt upon its lot.[37]

In determining whether a structure's dimensions or location should be modified to meet the purpose of the Beach Preservation Act, the state shall balance the actual and potential hardships or benefits that may be experienced by the structure's owner against any actual or potential hardships or benefits that may be incurred by the state, the public, or adjacent landowners. Factors to be considered in carrying out the balancing test include: the purposes of the Act and its regulations; the potential for federal or state expenditures to the property prior to or after construction, or after a natural disaster; the protection of the state, public, and adjacent landowners from actual and potential financial and property loss; actual and potential financial and personal loss to the structure's owner; the possibility of modification or redesign by the state; or any design alternatives or amendments submitted by the owner.[38]

The "balancing test" as described in the Beach Protection Act provides a framework for assessment of impact of redevelopment in coastal areas. There are no written guidelines to perform this test. The balancing test is designed to insure that assessors will consider all relevant issues in making their determination.[39]

There were many challenges to the Beach Protection Act in the early 1970s, with one case going to the Delaware Supreme Court. Today, however, legal challenges are rare because the legislative restrictions placed on coastal development are expected and understood.[40]

---

[35]Florida Department of Natural Resources, Office of Policy and Planning, Beach Redevelopment, March 1993, p. III-8.

[36]Telephone interview with Maria Sadler, Environmental Scientist, Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation, September 27, 1993.

[37]Ibid.

[38]Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation, Regulations Governing Beach Protection and the Use of Beaches, Revised and Effective December 27, 1983.

[39]Tony Pratt, Project Administrator, Delaware Coastal Program, November 24, 1993.

[40]Ibid.

D.8. Conclusion

Florida currently has a substantial improvement law in Chapter 161, F.S. that applies to the coastal building zone that states:

> any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds a cumulative total of 50 percent of the market value: (a) Before the improvement or repair is started; or (b) If the structure has been damaged and is being restored, before the damage occurred.

In order to implement an effective post-storm redevelopment policy the substantial improvement law would have to apply to private structures within the 30-year erosion projection area. Therefore, any structure substantially damaged, regardless of foundation damage, would be required to meet standards and criteria of new CCCL applications. In addition to private structures, the 50 percent substantial improvement rule should also apply to the State's Coastal Armoring Policy so that rebuilt structures can be brought into compliance with current standards and criteria. If not, the structures should be removed by the upland property owners.

APPENDIX E.

Pre-storm Application of a Replatting Program for Post-storm Redevelopment

E.1. Introduction

This appendix addresses one option for implementing pre-storm planning, the cooperative local government/landowner approach to redesign of a subdivision for post-storm redevelopment.

This approach applies state policies for post-disaster redevelopment, recognizing that when it comes to regulation of land use and development, it is the local government that has primary responsibility. It also assumes that in some beachfront areas the post-storm redevelopment options will be restricted because of federal, state and local regulations on development in hazardous coastal areas. This approach is presented as one possible strategy for the state and local governments to carry out their shared responsibility of managing beachfront redevelopment.

The discussion relates to specific categories outlined in Section 5.1, Pre-storm Identification of Post-storm Beach Management Options.. These are:

Category 3 Reduce Site Coverage of Beachfront Areas;

Category 4 Reduce Site Coverage of Beachfront Area and Implement Beach Restoration/Enhancement Program;

Category 5 Relocate Structures Landward of Active Beach and Frontal Dune.

E.2. The Concept

The Local Government Comprehensive Planning and Land Development Regulation Act (Chapter 163, Florida Statutes) requires local governments to prepare post-disaster redevelopment plans as part of their comprehensive plans. Pursuant to Chapter 163, these plans should adopt long-range policies to relocate structures from hazardous coastal areas, and should be coordinated with other local policies

and regulations. Although not currently required by statute, these plans should also adopt policies consistent with the state Beach Management Plan which also includes policies to relocate structures.. The key aspects of implementing a relocation approach include:

o Subdivision Regulations;
o Capital Facilities and Infrastructure Provision;
o Land Use Plan/Zoning Ordinance; and
o Incentives for Voluntary Relocation.

The hazard prone areas were once bulk acreage, and were platted into development parcels. Further subdivision may have occurred to the point where there are many small-lot subdivisions within hazardous areas. There are three main scenarios defining the level of development in these areas:

(1) Highly Urbanized;
(2) Urbanizing; and
(3) Low Density and Undeveloped.

Regardless of the scenario, the approach presented here is a local government initiated effort to cooperate with the landowners during the pre-storm planning for post-disaster redevelopment to actually determine the type and location of post-disaster redevelopment. What is discussed is an approach which includes the following steps:

o identifying the areas where rebuilding will be allowed and where it will not be allowed;
o determining what type of building will be allowed;
o establishing the management concept for the redevelopment activity;
o allocating development density to individual owners;
o determining necessary subsidies and identifying incentives to be used; and
o calculating the financial requirements of the entire effort.

In simple terms, what is discussed is a type of multi-owner clustering of density. The different landowners pool their density, and shift location to one which is acceptable given current policy and regulatory approaches. The concept

includes both clustering density on-site, clustering density off-site to pre-identified parcels, and a mixture of both approaches. It also includes the idea of redevelopment of the same uses, or redevelopment with a mixture of uses pursuant to the pre-storm plan for post-storm redevelopment.

E.3. Planning for Cooperative Replatting

E.3.1. Initial Steps

The process of a cooperative replatting for post-storm redevelopment begins with a description of the reasons for selection of the area from the framework of federal, state and local regulations. Included in the description should be the need for implementation of the replatting, and its effect on the community and on the individual landowners.

Then, through preparation of a concept plan, a master plan and an implementation plan for the project, explanations are made to land owners and local residents and public hearings are held, while coordination with other public organizations related to the project are made simultaneously. Based upon repeated feedback, a project takes shape, after obtaining consent to the details.

The state plays a critical role in this effort. In addition to preparing the set of criteria that local government may use in identifying candidate sites, the state must create the training program and the training materials that will enable local government personnel to undertake this type of pre-storm redevelopment planning.

E.3.2. Implementation System

To begin a project, it is necessary to establish an administrative entity to implement the project. If a public body will be in charge, an organization of local government can carry out the project. In most cases, however, an organization of land owners and long term leaseholders should be established to promote preparation of the plan.

At this stage, it is important that a manual exists which explains the administrative options possible, and gives examples of how they should function. Again, this document can be provided by the state to help ensure that the trained professionals coordinating this process have the best information possible.

E.3.3. Surveys and Studies

In the beginning, land owners and the administrative agency closely coordinate to determine the contents of the plan. At this point, government must cover the expense of necessary surveys and studies.

This is not a question of extensive original research. For example, the state's Division of Beaches and Shores can provide information concerning historical erosion rates, dune profiles, etc. There are also other state and regional sources of data which can be used in putting together the plan.

This work includes identifying where development will be permitted after the storm, and where it will not be permitted. It will also determine the appropriate development pattern for the area, and identify the extent, if any, of additional land that will be needed to accommodate the redevelopment density of the site. Each landowner's entitlement under the post-storm plan must be determined in relation to their pre-storm entitlement, and comparative charts prepared showing these elements for each land owner.

The concept plan prepared for the site, or for an alternate site, or a combination of both, is then taken to the community for review and comment, and then a detailed plan is prepared.

E.3.4. Legal Procedures and Administrative Approvals

The detailed plan is similar to a subdivision and development plan, and the appropriate agencies must review and comment on the proposal, making sure that it does not conflict with any policies or regulations. Clarification of the roles of different agencies need to be made, fiscal responsibilities need to be determined, and fiscal commitments need to be made.

E.3.5. Reaching Consensus with the Landowners

Coordination with the landowners is critical for this effort. Education and information dissemination efforts are important, but direct one-on-one communication between land owner and government staff is critical to the success of this stage of the process.

Landowners must understand that what is being planned is what will happen when disaster strikes. It is contingent planning for a future risk, it is based upon what policy and law require, and it is what will get the area rebuilt the quickest in the event disaster does occur.

Initial land owner reaction may be rejection or strong anxiety about the plan. The plan can be complex, include many land owners, and involve great changes in property of individuals and corporations. For these reasons, it may be difficult to reach consensus with the land owners unless they fully understand the framework and contents of the plan.

If there is not enough coordination with the landowners at the initial stage, they may feel as if they are victims of a plan being forced upon them. In order to promote a replatting concept as smoothly as possible, it is necessary to hold explanatory meetings at each step of the project until a vast majority of the land owners understand and approve the plan. Suggested procedures for coordination with landowners include:

explanation of the need for the plan;
getting their input for a concept plan;
combining land owner and government input for a revised plan;
getting their input for the final plan; and
getting their approval of the implementation plan to be put in place in the event of a disaster.

Smooth coordination with landowners requires a landowner organization to deal with the governmental administrative agency. Many times a condominium association or home owners' association can be used, and for larger sites, a combination of existing organizations and individual land owners can be brought together in a new entity. It is often helpful to have a third party involved in coordinating this effort--such as a local land trust. A land trust can provide a detached, yet interested approach that can help foster cooperation among the landowners themselves, and between the landowners and the local government.

Surveys can be used to gather opinions. Pamphlets and drawings describing the plan can be distributed. An office for the organization can be established, and a newsletter reporting on progress can be published by either the association or the government agency.

E.4. The Implementation Organization and System

To achieve approval of a post-storm replatting plan and provide for its implementation, the governmental administrative agencies and the landowner body should establish a system for implementation. Elements of this system include:

Role of the State--to advise local government on policies to encourage post-storm replatting, to coordinate with other agencies related to the planning, regulatory, or fiscal aspects of replatting, to provide technical information and technical assistance, and to provide assistance in securing funds for implementation of the plan;

Role of Florida's Communities Trust--to inform local land trusts about the benefits of pre-storm redevelopment planning, to assist a local land trust's work with local governments and landowners in preparing post-storm redevelopment plans, and to provide funding for implementing the plan;

Role of Local Government--to provide technical guidance to individual projects and to approve projects;

Role of the Implementing Body--to plan and manage the process, and negotiate with land owners;[41]

Role of Local Land Trusts--to work with landowners and local government to educate and inform interested parties about the planning process, and to assist in consensus-building in the redevelopment planning process.

E.5. Funding Strategies

This type of redevelopment planning is very labor-intensive. Numerous meetings must be held to introduce the concept, and numerous meetings must be held to educate the interested parties about the options available. Then, once the

[41]This body can be either the local government agency or the land owners' organization.

organizational effort has been accomplished, the process of consensus-building to determine an acceptable post-storm plan will require many more meetings.

In addition, substantial technical information must be collected, and once the plan is determined, technical planning must be undertaken similar to the effort necessary to get a development project ready for the approval process.

This is expensive in terms of both staff and consultant services.

Federal and state financial support will be necessary to fund initial efforts to implement this type of redevelopment planning. As the technique becomes more understood, it can become a part of the planning process used by coastal communities.

E.6. Selected Experience to Date

Research has not yielded any specific cases of pre-disaster planning for post-disaster redevelopment in hazardous coastal areas. However, there has been substantial experience with redevelopment pursuant to a replatting plan following a disaster, and even redevelopment before a disaster using a replatting plan to lessen the risk of future disaster.

E.6.1. Europe

Property reorganization schemes were implemented in London after the Great Fire of 1666, in Posen, Poland after a fire in 1803, and in Hamburg, Germany after the Great Fire of 1842.

German statutory "Land Regroupment" legislation, designed for urban redevelopment and passed in 1903, was used in East Prussia as a means to reconstruct areas devastated by World War I. The massive destruction of World War II made it imperative to reorganize property in Germany as soon as possible, and all reconstruction legislation had "Land Regroupment" clauses.

E.6.2. Japan

The redevelopment of the area struck by the Great Kanto Earthquake in Tokyo, Japan in September 1923 was assisted by the replatting of land ownership through a process known as "Land Readjustment." Almost 9,000 acres were replatted using this technique.

Examining the devastation from the winds and flooding of Typhoon Muroto in Osaka and Kobe in September 1934, special ordinances for disaster restoration-related Land Readjustment projects were formulated.

Following World War II, special legislation was enacted which ultimately led to 70,000 acres in 102 cities being redeveloped using "Land Readjustment." In Nagoya, 23 per cent of the city, including the central area, was destroyed during the War. The city initiated a War Recovery Land Readjustment Project for an 8,500 acre area. This area was divided into 48 districts and a replatting plan was formulated for each district.

More than 70,000 land owners cooperated in the Nagoya project, and more than 44,000 buildings were removed or relocated, since the project area included adjacent areas where there were no destroyed buildings.

And, in Tokyo, the current Urban Redevelopment Master Plan takes into account numerous risks of natural disasters, and requires redevelopment projects to use Land Readjustment as necessary to promote the redevelopment in such a way as to mitigate against such possible disasters.

E.6.3. United States

In the United States, several jurisdictions have had experience with replatting subdivisions. This experience ranges from consolidation for environmental reasons to consolidation for urban and suburban development and redevelopment.

One of the more relevant examples is the case of Ormond Beach in Oxnard, California. The original plat for Ormond Beach was recorded in 1906 and it created beachfront lots that were 30 feet by 133 feet. California's Coastal Zone Management Act, adopted in 1972, made development of Ormond Beach difficult, if not impossible. As a consequence, a lot owners' association was formed and a plan was eventually approved to:

allow development rights of individual lot owners to be consolidated into a single entity with authority to negotiate on behalf of the owners;

allow consolidated development rights to be transferred to a receiver site owned by the city and having a value comparable to the Ormond Beach properties; and

provide a receiver site to accommodate a proposed hotel/commercial mixed use zoning that differed drastically from the high density single family development for which Ormond Beach had been platted.

A key player in the Ormond Beach example was the California State Coastal Conservancy. The City staff had recommended that the project be reviewed by the Conservancy when it was initially proposed. The Conservancy recommended an alternative use based upon its knowledge of State Coastal Commission policies and past decisions on similar projects. A process was initiated which included the City of Oxnard Planning Department, the Redevelopment Agency, the Coastal Conservancy and the association of property owners. The end result of this process was the mixed use concept.

E.7. Concluding Comment

Though no direct United States experience has been identified with pre-storm application of a replatting program for post-storm redevelopment, the relevant experience both abroad and in the United States justifies the further examination of this technique as a possible efficient and effective way to meet the state's desire to:

> ...take advantage of the opportunity to rebuild in a manner which will minimize future losses of life and property.[42]

---

[42]Florida Department of Natural Resources, Office of Policy Planning, Beachfront Redevelopment, March 1993, p.1.

APPENDIX F

Impacts of the National Flood Insurance Reform Act of 1993 on Florida's Coastal Construction Control Line Program

F.1. Introduction

Flood insurance reform has been under consideration by Congress since 1989. In 1989 National Academy of Sciences convened a panel of experts to address the problems of coastal erosion rates and the appropriate actions necessary to stabilize these rates. A final report was issued in 1990. This process has become the basis of the National Flood Insurance Reform Act of 1993, sponsored by U.S. Senator John F. Kerry (Massachusetts).[43]

The reforms called for in this legislation may have some positive impacts in relation to the implementation of Florida's CCCL (CCCL) program.

F.2. Establishment of a 30-year Erosion Line

One of the major reforms called for in the National Flood Insurance Reform Act of 1993 is the establishment of a 30-year erosion line. This line would serve to indicate the 30-year erosion hazard area wherein the Act prohibits flood insurance for new construction. Additions to existing structures that make them not readily movable would also be prohibited. The Act would also limit the availability of flood insurance to new readily movable residential structures within 60-year erosion hazard areas.[44] A "readily movable structure" as defined in the Act is "a small permanent structure of less than 5,000 square feet that is designed, sited, and built to accomplish relocation at a reasonable cost relative to other structures of the same size and construction and that has access of sufficient width and acceptable grade to permit such relocation."[45]

---

[43]The National Flood Insurance Reform Act of 1993, Senator John F. Kerry, "Answers to Commonly Asked Questions," August 5, 1993.

[44]S. 1405, The National Flood Insurance Reform Act of 1993, Senator John F. Kerry, "Summary of Major Provisions."

[45]S. 1405, National Flood Insurance Reform Act of 1993, sponsored by Senator John F. Kerry, p. 11.

The 30-year erosion line as used by the 1993 Reform Act would determine the types of construction that will be eligible for federally backed insurance. The Act would require the Federal Emergency Management Agency (FEMA) to update flood insurance maps every five years and to distribute revised maps free of charge to states and communities, and to publish changes. FEMA would be required to map the 30- and 60-year erosion lines and hazard areas using erosion rate data and baseline reference features. This process would be performed by using existing state erosion data and reference features. Local mitigation activities, such as beach renourishment, must also be considered in the mapping process. A technical mapping advisory council would be created to provide guidance and recommendations to improve the flood insurance rate maps.[46]

Florida's Department of Environmental Protection (DEP), through the CCCL program, will not issue a permit for any structure, other than a coastal or shore protection structure, minor structure, or pier, proposed for a location projected to be seaward of the mean seasonal high water line within 30 years after the date of application for such permit (known as the 30-year erosion projection line and determined by DEP's erosion projections for the area), except for construction of a single-family dwelling on a parcel platted or subdivided before October 1, 1985.[47] The Department will also not permit repairs or rebuilding that expand the capacity of the original structure seaward of the 30-year erosion projection.[48]

Presently DEP determines the 30-year erosion line on a parcel by parcel basis. If the reforms called for in the 1993 Act are enacted, 30-year and 60-year erosion lines may be determined and continually updated for the entire state.

---

[46]The National Flood Insurance Reform Act of 1993, "Section-by-Section Summary," August 5, 1993, SEC. 604-605.

[47]16B-33.006(3) Florida Administrative Code.

[48]16B-33.006(4) Florida Administrative Code.

F.3. Changes to the National Flood Insurance Program

The 1993 Act reforms many of the policies set by the original National Flood Insurance Program (NFIP). Some of these reforms have relevance to Florida's coastal zone management program and implementation of a post-storm redevelopment policy for beachfront areas.

The purpose of the original NFIP, created in 1968, was to make flood insurance available to residents of communities that qualify for the program. Community participation requires public adoption and enforcement of specified construction and land development regulations designed to minimize the risks inherent to flood prone areas. Many communities participate because insurance in coastal high hazard areas is not often available from the private sector.[49]

Virtually all Florida communities participate in NFIP. A community's eligibility for federally insured mortgage loans depends on participation in the flood insurance program.[50] Florida also requires participation in the program for inclusion in the state's hazard mitigation plan under Chapter 252, F.S. Construction within the state's Coastal Building Zone must meet NFIP standards, regardless of whether or not the community is a program member.[51]

F.3.1. The State and Community Mitigation Assistance Program

The National Flood Insurance Reform Act of 1993 would create the State and Community Mitigation Assistance Program to replace the Upton-Jones Amendment and Section 1362, the Repetitive Loss Buyouts section, of the original NFIP.[52] The Upton-Jones Amendment gave advance insurance payouts to eligible structures in danger of imminent collapse from erosion to relocate or demolish their structure.

Relocation and demolition activities, previously handled under the Upton-Jones Amendment, would be included under the State and Community Mitigation Assistance Program established by the new act. This program, carried out and

---

[49]Florida Department of Natural Resources, Office of Policy and Planning, Beach Redevelopment, March 1993, p. I-9.

[50]Florida State University (FSU), Dept. of Urban and Regional Planning, State Post-Storm Redevelopment and Coastal Storm Hazard Mitigation Policy: Preliminary Partial Draft, August 9, 1993.

[51]Ibid.

[52]The National Flood Insurance Reform Act of 1993, "Section-by-Section Summary," August 5, 1993.

coordinated by the Federal Insurance Administrator (FIA), would finance mitigation through building acquisition, elevation, relocation, demolition or floodproofing, and technical assistance. States and communities with federally approved mitigation plans would be eligible for the program. Planning grants, available through the program, would be capped at $150,000 for states and $50,000 for communities, with a limit of $300,000 total for any one state per year. Mitigation grants would be capped at $10 million per state, and $3.3 million per community over a five-year period, with a limit of $20 million per state in any five-year period. All grants would require a non-federal matching fund of 75/25. Funding for the program would come from the NFIP and be phased in at $10, $15, and $20 million over the three fiscal years after enactment, and would not exceed $20 million per year thereafter.[53]

The National Flood Insurance Reform Act of 1993 would remove the Upton-Jones Amendment one year after date of enactment. One reason for this deletion is that, over the years, most people eligible for this program opted for the 110 percent demolition payment rather than the 40 percent relocation payment, creating a deficit for the program.[54]

Section 1362, the Repetitive Loss Buyouts section of the NFIP, allows FIA to purchase properties that are located in a floodplain and have been flooded three times in the previous five years or substantially damaged in a recent flood event. This program has been limited by a number of conditions, including an insufficient budget, preference for contiguous and high-priced parcels, and demolition costs and tax losses to local communities. Florida's coastal construction permit process incorporates this program by stating that if a permit cannot be approved the state will recommend that the property be purchased under the program. This option has never been exercised.[55] This section would also be repealed by the National Flood Insurance Reform Act of 1993 and its functions absorbed under the State and Community Mitigation Assistance Program.

---

[53]Ibid.

[54]The National Flood Insurance Reform Act of 1993, Senator John F. Kerry, "Answers to Commonly Asked Questions," August 5, 1993, p. 8.

[55]FSU, Dept. of Urban and Regional Planning, State Post-Storm Redevelopment and Coastal Storm Hazard Mitigation Policy: Preliminary Partial Draft, August 9, 1993.

F.3.2. Expansion of the Community Rating System

The Community Rating System (CRS) established under NFIP rewards communities with reduced flood insurance rates in return for providing floodplain management beyond NFIP minimum standards. The National Flood Insurance Reform Act of 1993 would expand this program to make it more pro-active. It would authorize premium rate credits for communities that implement land use and loss control measures that exceed minimum criteria, promote flood insurance awareness, and provide incentives for management of natural and beneficial floodplain functions and erosion hazards. It also authorizes funds from the NFIP to carry out this program.[56]

F.3.3. Changes Regarding Regulated Lending Institutions

While it is possible to build a permitted structure in a coastal area without having it insured, in most cases insurance is required by federally backed lending institutions. This is why the regulation of federally backed lending institutions would have a substantial influence over the type and location of structures built in coastal areas.

The National Flood Insurance Reform Act of 1993 would extend mandatory flood insurance purchase requirements to federal agency lenders and to Fannie Mae and Freddie Mac home mortgage programs. The Act would also require regulated lending institutions and federal agency lenders to escrow for flood insurance payments if they escrow for other taxes, insurance premiums and fees. It would authorize regulated lending institutions and federal agency lenders to purchase flood insurance on behalf of the borrower within 60 days if property is in a flood hazard area and not insured. It would also require regulated lending institutions and federal agency lenders to notify borrowers of flood hazards.[57]

The Act calls for a system of penalties and corrective actions for failure of regulated lending institutions to meet certain requirements. Fines could be imposed upon regulated lending institutions for failing to require flood insurance, escrow for flood insurance payments, or notify affected property owners of flood insurance purchase requirements.[58]

---

[56]The National Flood Insurance Reform Act of 1993, "Section-by-Section Summary," August 5, 1993.
[57]Ibid, SEC. 201-204.
[58]Ibid, SEC. 207.

F.3.4. Other Features of the Act

There are several other features of the National Flood Insurance Reform Act of 1993 that may or may not be relevant to Florida's implementation of its coastal zone management program. These include:

o Standardizing flood hazard determination forms;

o Requiring on-site examinations to determine whether an institution is complying with NFIP requirements and reporting such findings to Congress;

o Establishing a flood insurance interagency task force;

o Increasing maximum coverage amounts for single-family residents from $100,000 to $250,000 and for non-residential properties from $250,000 to $2.4 million.

o Authorizing funding for increased administrative and operational costs;

o Authorizing the Director of FEMA and any other appropriate federal agency head to issue regulations necessary to implement the provisions of the amendments; and

o Requiring FEMA to consult with National Oceanographic and Atmospheric Administration (NOAA) to promote coordination regarding coastal erosion management. Approved state coastal zone management programs are used in designing regulations and guidelines. A jointly filed coordination report would be required one year after date of enactment.[59]

F.4. Conclusion

The National Flood Insurance Reform Act of 1993 supports the regulatory provisions of Florida's CCCL program and may even strengthen the objectives and implementation of a post-storm redevelopment policy. The establishment of a 30-

[59] Ibid.

year erosion line and restrictions on the type of structures that can be federally insured seaward of this line would correspond to Florida's restrictions on permitting structures seaward the 30-year erosion projection line.

However, the Act does not prohibit *non-federally* regulated lenders from making loans in 30-year erosion hazard areas. So like the CCCL program, the Act is not completely prohibitive. The two programs do not prohibit construction or insurance in the 30-year erosion zone, but they do reinforce each other in protecting the beachfront area from imprudent construction.